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ARCHAEOLOGICAL INVESTIGATIONS IN THE DEEP CREEK-FRENCH CREEK LOCALITY DEER LODGE COUNTY, MONTANA

MARC B. SMITH
1979

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MARC B. SMITH
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Bozeman, Montana 59715

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I.

INTRODUCTION

In 1976, the Montana Department of Fish and Game purchased 55,000 acres of Mt. Haggin Ranch property. The acquisition is contained primarily within Deer Lodge County with a small encroachment into Silver Bow County, south of Gregson, Montana. The northern boundary lies approximately six miles due south of Anaconda, Montana, and is easily accessible by Highway 274.

The tract is reached by driving south on Highway 274 from Anaconda, into the flanks of the Anaconda Range. The road climbs to cross the Continental Divide, which bisects the tract from east to west, before descending into the Deep Creek-French Creek basin. At the south end of the basin, which is also the south boundary of the acquisition, Deep Creek and French Creek converge and then flow south into the Big Hole River two miles downstream (Fig. 1).

Archaeological investigations first began in the summer of 1977. In June 1977, Dr. Leslie B. Davis of Montana State University contracted with the Montana Department of Fish and Game, Recreation and Parks Division, to conduct a preliminary archaeological surface reconnaissance of the Mt. Haggin Ranch acquisition. An interview with Jim Drummond, early resident of the area now residing in Bozeman, revealed a number of potential prehistoric and historic sites. Under the direction of Dr. Leslie B. Davis, a crew consisting of John Darroch, Jack Fisher, Bill Spencer and myself visited the area in June 1977 to verify those locations mentioned by Mr. Drummond and to investigate other likely looking areas for sites. By the conclusion of this visit, three sites mentioned by Mr. Drummond were verified. Including other located sites, a total of nine prehistoric and one historic site was identified. The findings of the preliminary reconnaissance were reported by Dr. Leslie B. Davis to the Montana Department of Fish and Game by letter of 29 June 1977.

In July 1978, the Montana Department of Fish and Game contracted with the author to do a more intensive survey to aid in the development of a management plan. Because of the relatively high site density, determined by the previous year's reconnaissance, and ease of access and therefore its potential attraction for visitors, 5,640 acres contained within the Deep Creek-French Creek basin were selected for intensive study (Secs. 1, 2, 3, 9, and 10, T2N, R12W; Secs. 25, 35, and 36, T3N, R12W; Sec. 30, T3N, R11W).

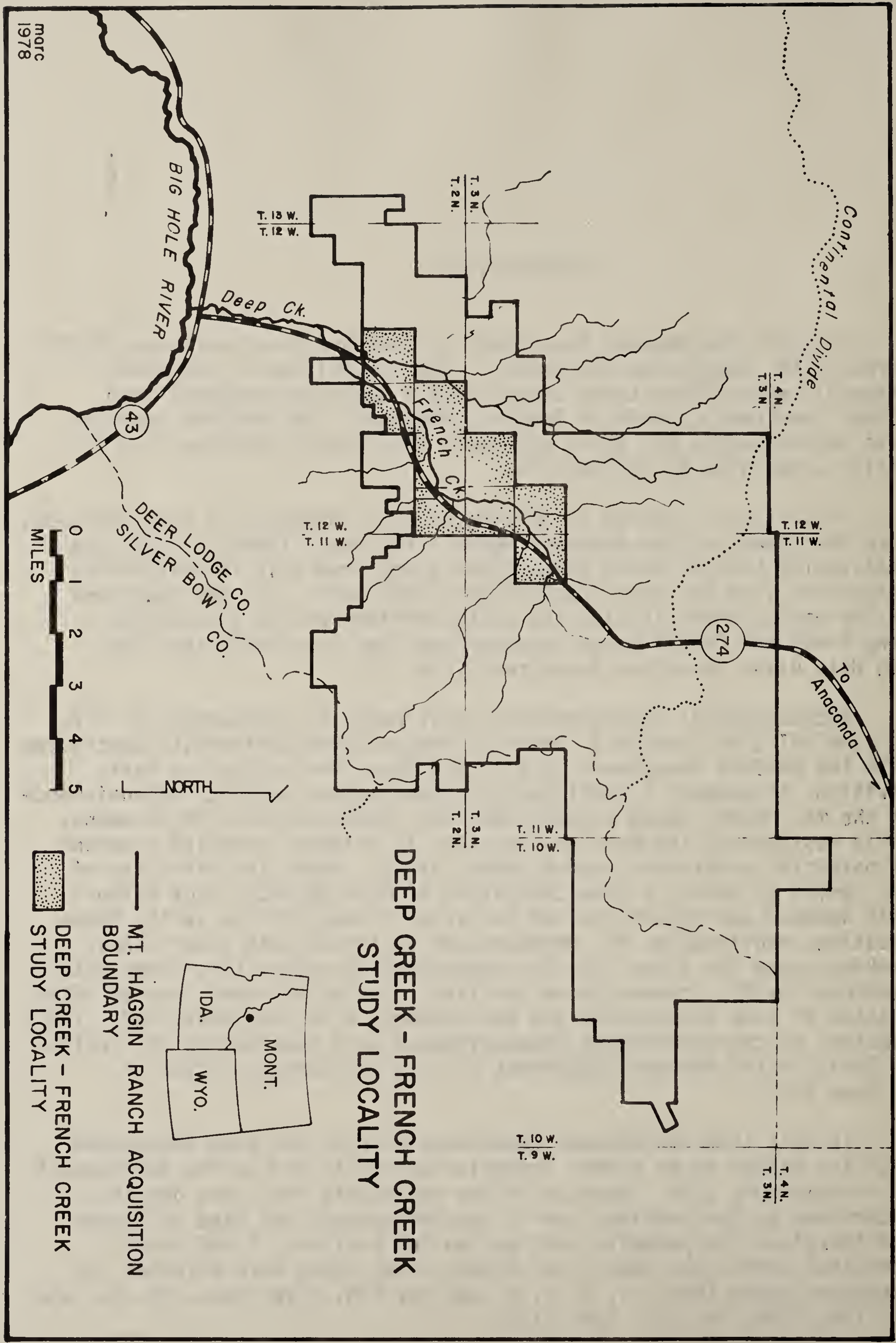

Figure 1. Deep Creek-French Creek Study Locality within the Mt. Haggin Ranch Acquisition.

Physiographically, the study locality is generally homogeneous. Numerous perennial and intermittent streams dissect a glacial outwash plain, creating prominent grass and sage-covered terraces. Rank grass, sedge, and willow are present along the perennial stream channels. At higher elevations and occasionally on north facing slopes, second growth pine occurs. Elevation varies from 6620' in the northwest corner to 5920' along the southern boundary.

Field work began on 24 July 1978 and was completed on 11 September 1978. Time permitting additional transects were planned for the higher areas northeast of the study locality. However, rain and snow beginning in mid-September prevented visiting those additional areas. At the conclusion of the 1978 survey, an additional 33 prehistoric and three historic sites had been identified and recorded.

The total number of sites discussed in this report is 46: 42 prehistoric and four historic, all located during the 1977 preliminary reconnaissance or the 1978 survey. Site reports were filed with Dr. Dee Taylor, University of Montana. Site reports and this report were submitted to the Region 3 Office, Montana Department of Fish and Game, Bozeman.

II.

PHYSIOGRAPHY AND ENVIRONMENT OF THE DEEP CREEK-FRENCH CREEK LOCALITY

Extending north from the Big Hole River, the Deep Creek-French Creek drainage basin is considered part of the Big Hole Basin physiographic unit and shares its geologic history. Defined by early Tertiary Period faulting of an existing peneplain, the basin has been gradually enlarged by erosion. Alternating aggradation and erosion of basin sediments has created the prominent terraces visible today.

II.1 Early Geologic History

A peneplain with little relief existed in the area of southwestern Montana 53 million years ago during the early Tertiary Period. A general uplift warped and faulted the peneplain creating today's Rocky Mountains and defining a number of large intermountain basins in western Montana (Atwood 1916:707). Erosion dissected the mountains and enlarged the intermountain basins until the middle Tertiary Period. At this time, massive basalt flows of the Idaho Batholith and further uplifting of the earth's crust appears to have produced interior drainage patterns for the majority of the basins (Thornbury 1965:402). Material carried from the surrounding mountains soon filled the basins with a variety of colluvial and alluvial deposits. These sediments continued to fill the intermountain basins for approximately 20 million years (Alden 1953:1).

Along French Creek, these exposed sediments appear as dirty white clay, characteristic of slow moving or ponded water. Closer inspection of the strata reveals a combination of volcanic ash, from the previous volcanic activity, interbedded with washed sand and gravel (Perry 1934:9).

Approximately 12 million years ago during the late Tertiary Period, the Missouri River succeeded in capturing a number of basins in southwestern Montana (Atwood 1916:714), establishing the present drainage pattern.

II.2 Recent Geologic History and Modern Environment

The Pleistocene glaciations of the Quaternary Period, beginning approximately three million years ago, signals an end to the Tertiary

Period. While four major glacial advances have been documented in North America, evidence of only the last is identified in the Deep Creek-French Creek basin (Atwood 1916:717).

The intermountain area of southwestern Montana was not covered by the extensive continental glaciers which periodically covered much of Canada and parts of the northern United States. Instead, alpine glaciers pushed out of the mountain ranges into the surrounding basins (Alden 1953:2). Huge quantities of crushed rock scoured from the cirque basins in the mountains, were transported and deposited in the basins by the glaciers. Superimposed glacial outwash terraces created an extensive, gently sloping outwash plain in the Deep Creek-French Creek basin. Remnants of this outwash plain can be seen as long ridges running from the base of the Anaconda Range out into the basin between French, Tenmile, Twelvemile, and Sullivan Creeks (Fig. 2) (Alden 1953:76).

The Anaconda Range, composed primarily of volcanic intrusives in limestones containing cryptocrystalline silicate nodules (chert), (Alden 1953:613; Perry 1934:8a), was the source for the gravel deposits in the Deep Creek-French Creek basin. Man took advantage of these resources provided by the erosional pattern at various times during his occupation of the basin. Prehistoric man utilized the readily available cryptocrystalline silicate nodules found in the gravel terraces as a source of material for his tools. More recently, in the 1860's, gold which had been scoured from the igneous intrusives and deposited with the glacial gravels was placered from the terraces.

Approximately 15,000 years ago, a warming trend began which would eventually melt the glaciers. The boreal forest gave way to an open savannah, a lush, well-watered range capable of supporting the Pleistocene megafauna. Prominent Pleistocene species consisted of mammoth (Mammuthus sp.), large bison (Bison antiquus), camel (Camelops sp.), horse (Equus sp.), ground sloth (Nothrotherium sp.), a large cat (Panthera atrox), dire wolf (Canis dirus), and modern forms of caribou (Rangifer sp.), mountain sheep (Ovis canadensis), elk (Cervus canadensis), deer (Odocoileus sp.), pronghorn (Antilocapra americana), and bear (Ursus sp.) (Butler 1978:39; Flint 1971:770-771).

As the trend to a warmer, drier climate continued, the environment reached a critical stage. The change from savannah to a drier short-grass prairie proved fatal for the Pleistocene megafauna. From sites excavated in the Great Basin area of Idaho, Butler (1978:39) has suggested extinction dates for some species. No mammoth remains have been found that date later than 10,000 years ago; camel and horse had disappeared by 9,000 years ago; and the large bison (Bison antiquus) had disappeared by 7,500 years ago, evolving into its smaller modern form, Bison bison.

By approximately 6,500 years ago, the last of the glaciers had melted from the high mountains (Butler 1978:33), and modern ecological systems were being established with only modern species persisting.

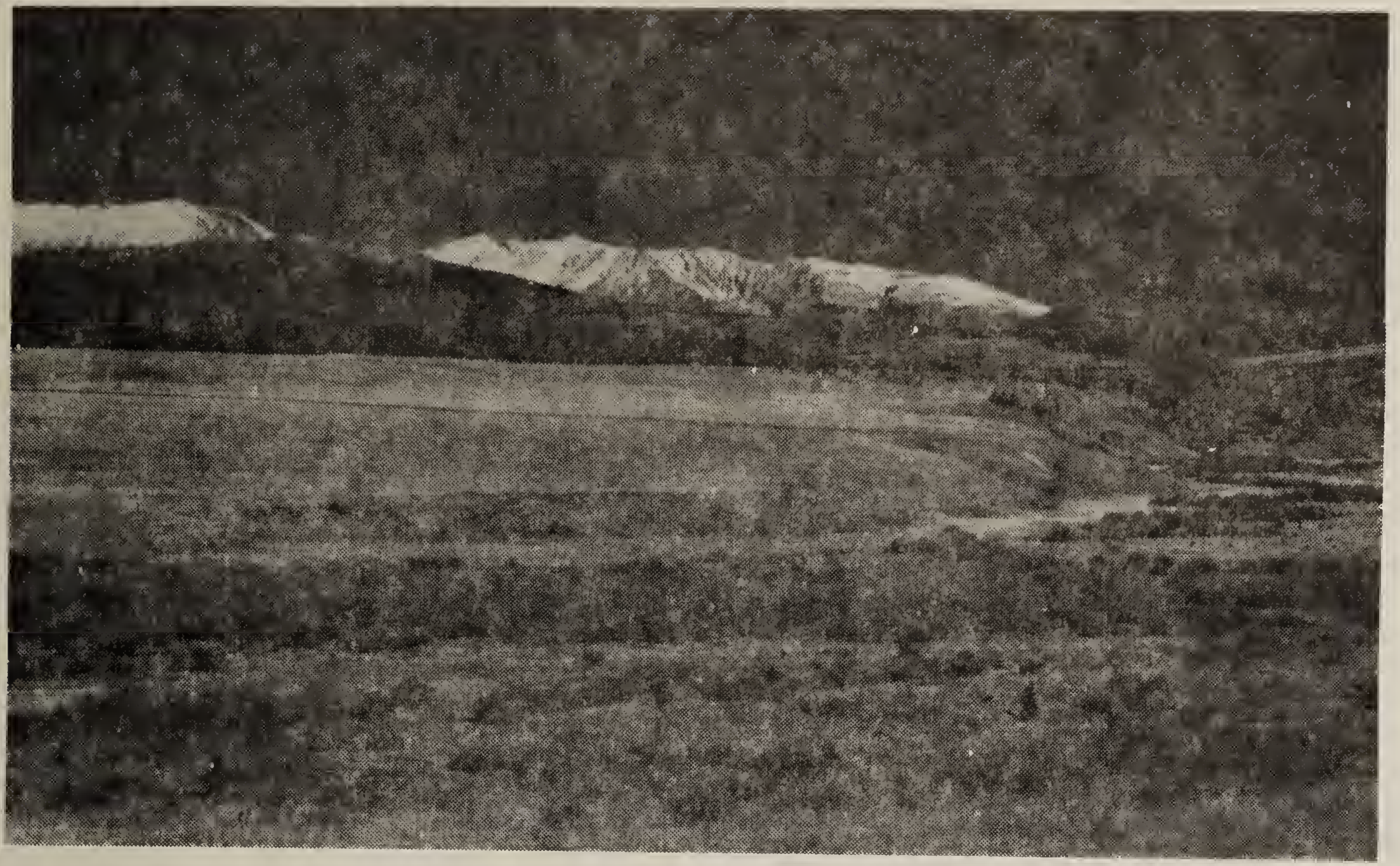

Figure 2. A terrace is created by erosion of the glacial outwash plain along California Creek.

Identifying recent climatological trends and resulting environmental changes has proven particularly useful in understanding the prehistoric cultural adaptations. One viewpoint, offered by Antevs (1955), utilizes the concept of three climatic intervals. The trend towards a warmer and drier climate, reaching a maximum approximately 6,000 years ago, is used to explain the major shifts in subsistence technologies of the prehistoric hunter and gatherer. The warming trend begins during the Anathermal (10,000 to 7,500 B.P.), and results in the extinction of many Pleistocene species. Mammoth and the large bison which had served as the major food resource for a variety of groups disappeared, forcing peoples to alter their hunting strategies. The continued warming trend climaxed during the Altithermal (7,500 to 4,500 B.P.), approximately 6,000 years ago. Generalized hunting and gathering strategies utilizing a greater variety of food resources characterize the cultural adaptations during this climatic interval. The Medithermal, a cooler climatic interval, began approximately 4,500 years ago and persists in to the present. Large communal bison hunting strategies emerge on the plains during this most recent climatic interval.

III.

THE ENVIRONMENT AND MAN

During 10,500 years of human occupation, the Deep Creek-French Creek basin supplied a variety of environmental and resource options for its inhabitants. Responses to these options, within a framework of social preferences, produced a unique record of man's activity in the area.

III.1 Culture Areas

It is useful to utilize the concept of culture areas to illustrate a general cultural sequence in the study locality. As defined by Jennings (1968:5), a culture area is ". . . a geographical area in which cultures show similarity in subsistence patterns and material culture, and a lack of similarity with other groups in adjacent areas." Ideally, the culture area is a homogeneous environmental unit, which tends to stimulate similar subsistence strategies for its inhabitants. Modifications and adaptations of the representative lifeway result as groups approach the margins of the culture area, and from subsistence specializations in differing local environments within the culture area.

Three culture areas are relative to the Deep Creek-French Creek basin: Plateau, Great Basin, and Northwestern Plains and, depending on the individual writer, the boundaries are adjusted to either include or exclude southwestern Montana (cf. Butler 1978; Davis 1977; Jennings 1968; Roll 1978; Wedel 1961; Willey 1966). The study locality was placed in the Northwestern Plains Culture Area to take advantage of the extensive work done in the plains (Fig. 3). Normally, the western boundary of the Northwestern Plains is drawn along the east edge of the Rocky Mountains, but a liberal interpretation of Wedel (1961:240) places ". . . the drainage basins of the Yellowstone and the upper Missouri . . . .", inside the Northwestern Plains Culture Area.

The location of the Deep Creek-French Creek basin makes the interpretation of its archaeological record a unique task. In the past, the mountains of southwestern Montana were thought to be of marginal importance to aboriginal man (Mulloy 1958:209; Swanson 1978:5); utilization of the area was considered sporadic and/or recent in nature by plains-adapted groups. However, as field work in the intermountain area continues to produce information, it has become apparent that earlier notions are inadequate. Not merely an environ-

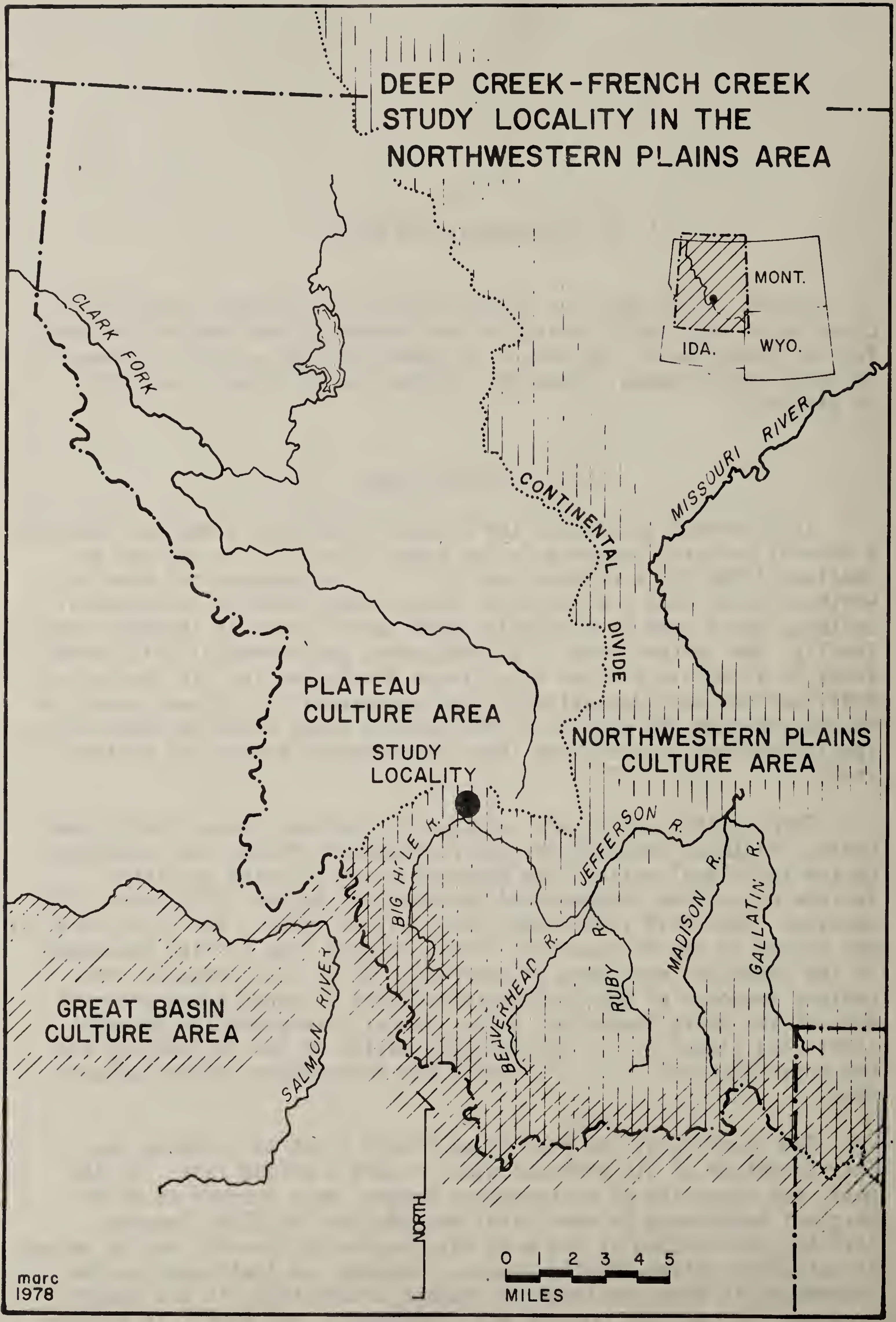

Figure 3. The Deep Creek-French Creek Study Locality in the Northwestern Plains Culture Area (after Butler 1978; Wedel 1961).

mental zone which plains-adapted groups sporadically utilized, the intermountain area hosted enduring culture groups that lived in and adapted to the mountain/foothill environment (Frison 1978:21; Swanson 1972:5; Wedel 1978:26). This combination of past notions and current ideas helps to express the uniqueness of the Deep Creek-French Creek study locality and the importance of its archaeological record.

III.2 Cultural Overview of Northwestern Plains and Study Locality

Pedestrian nomadic hunting and gathering was the primary adaptation of prehistoric Northwestern Plains inhabitants. The roving search for food, with a tool inventory limited to the minimum required for the hunt, the gathering of vegetal edibles such as roots, seeds, and berries, and the construction of simple shelter, clothing, and household utensils (Wedel 1961:253), produced the plentiful but, in many respects, meager archaeological sites evident throughout the Deep Creek-French Creek basin.

With refinements in dating techniques, significant changes in prehistoric peoples' subsistence stragegies have been correlated with climatic intervals, such as those identified by Antevs (1955). Organization of local prehistory utilizes three prehistoric periods (Mulloy 1958) which represent long-term adaptations to persistent environmental conditions. Culture phases or complexes identified within the prehistoric periods illustrate more specific adaptations to local and/or short term regional conditions (Fig. 4).

The Early Prehistoric Period (ca. 14,000 to 7,500 years B.P.), is characterized by the Early Big-Game Hunting Tradition (Willey 1966:38). Exploitation of large herd animals by small bands of hunters appears to be a consistent subsistence technique for about 7,000 years. Specialized mammoth hunting is represented by the earliest known group, the Clovis Complex (ca. 11,500 to 11,000 B.P.). Possibly in response to the declining numbers of mammoth, Folsom Complex groups (ca. 11,000 to 10,500 B.P.) extensively hunted the large bison, *B. antiquus*.

Beginning about 10,000 years ago, concurrent populations diverged somewhat in their adaptations. Some adapted to the mountain/foothill region, utilizing mountain sheep and occasionally bison, deer, antelope, and elk (Butler 1978:63). Others specialized in plains bison hunting (Frison 1978:30). These later hunting groups have been combined within the Plano Complex. Two of these groups have been identified in the Deep Creek-French Creek basin: the Agate Basin (ca. 10,500 to 9,500 B.P.) and Cody (ca. 9,500 to 8,500 B.P.) complexes.

By the end of the Anathermal climatic interval (ca. 7,500 B.P.), the warming trend defined by Antevs (1955), was producing an increasingly hostile environment. Many of the Pleistocene game animals used by the early hunters became extinct, forcing a change in the subsistence strategy.

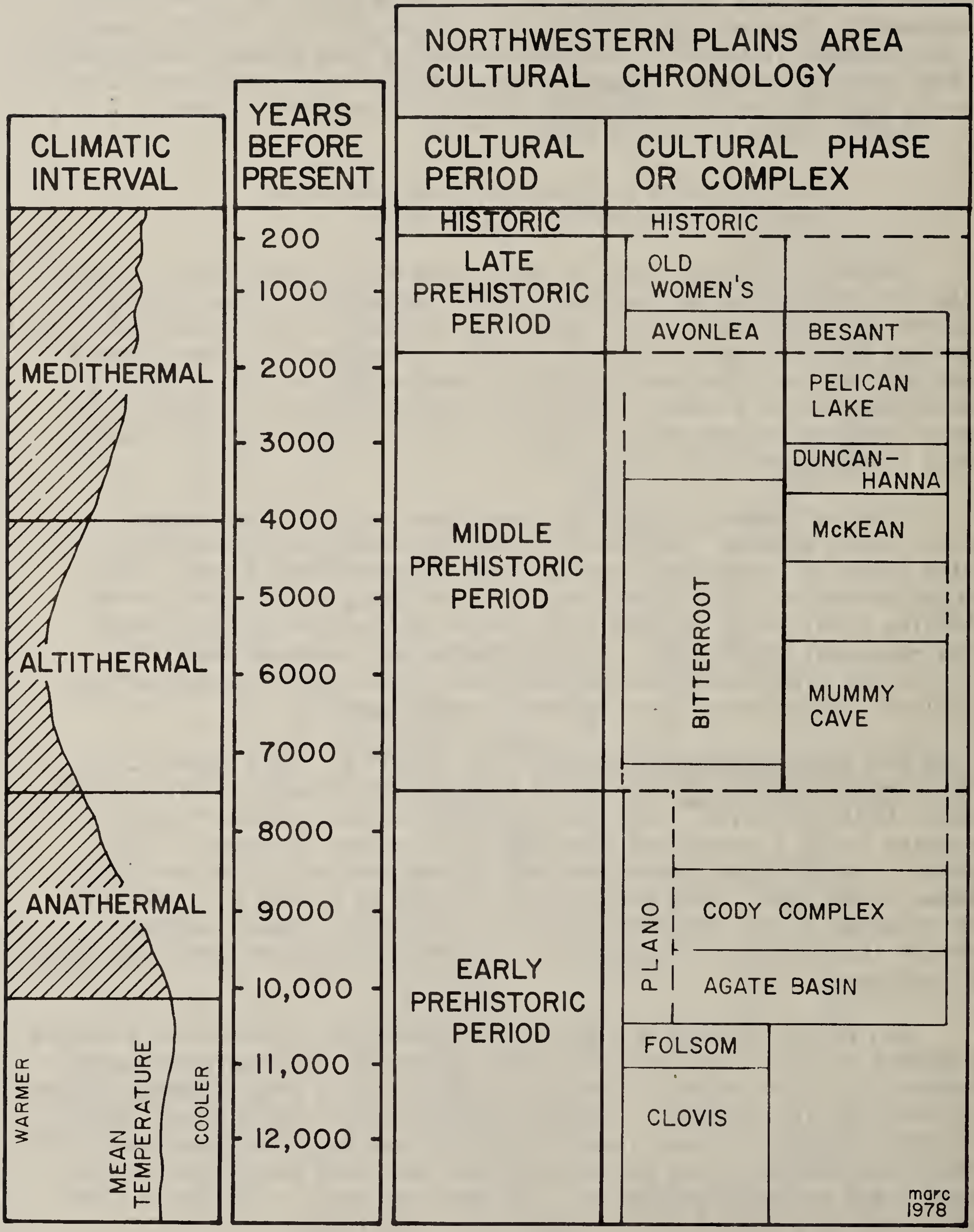

Figure 4. Cultural Chronology of the Northwestern Plains Culture Area, with modifications expected in the intermountain area of southwestern Montana (after Antevs 1955; Butler 1978; Roll 1978).

In many areas the hunt became less effective, stimulating increased attention to gathering edible vegetal material (Wedel 1961:251). The increase in variety of utilized food resources is reflected in the archaeological record of the Middle Prehistoric Period (ca. 7,500 to 1,750 B.P.). In the mountain/foothill region, the transition from the Early Prehistoric Period to the Middle Prehistoric Period is not as well defined as it is in the plains. At higher elevations, big game hunting strategies persisted, with emphasis on mountain sheep, antelope, and deer (Butler 1978:67; Wedel 1978:24). With the decrease in plains bison population, plains-adapted groups supplemented their diets with gathered vegetal edibles as well as small mammals such as rabbit and ground squirrel, even resorting to reptiles and insects (Wedel 1961:251) as food sources.

The Bitterroot Phase (ca. 7,500 to 3,500 B.P.) defined by Swanson (1972), represents those groups which persisted with the big game hunting tradition in the intermountain region of southwest Montana. During the Early Middle Prehistoric Period these peoples became an identifiable culture group. The mountains of northern Wyoming hosted another mountain/foothill-adapted group named the Mummy Cave Phase (ca. 7,500 to 5,500 B.P.). This adaptation was of much shorter duration than the Bitterroot Phase, but it shared similarities in material culture and utilized similar food resources (Wedel 1978:31).

Similarities in morphology between Mummy Cave and Bitterroot phase artifacts prevented distinguishing between the two point forms. Since the study locality is in the immediate area studied by Swanson (1972), I used the Bitterroot Phase as the representative culture group of the Early Middle Prehistoric Period in the study locality.

The warming trend which precipitated changes in life style among resident prehistoric hunters and gatherers reached its maximum during the middle of the Altithermal climatic interval (ca. 6,000 B.P.).

During these extreme conditions, the mountain/foothill environment may have been increasingly utilized by plains-adapted groups. The McKean Phase (ca. 4,500 to 3,500 B.P.) may represent such groups. Identified McKean sites reveal a wide range of resource utilization by hunters and gatherers of their immediate environment. Mountain sheep remains are common in the mountain/foothill sites, the sparse bison herds in the high plains were utilized, and foraging for vegetal material and small mammals seems to have been the subsistence pattern at lower elevations (Wedel 1978:31).

The duration of the McKean Phase is undergoing reappraisal. Traditionally (Mulloy 1958; Wheeler 1954), the Duncan and Hanna Phases have been distinquished from McKean. Currently, some authors (Frison 1978; McCracken 1978) are combining the Duncan-Hanna Phase with the McKean, thereby extending the McKean Phase 500 years.

With the lessening of the severe Altithermal climatic conditions, the prairie was once again able to support large numbers of herbivores. Most significantly, the bison population increased in the plains, and to some extent at the lower elevations within the mountain/foothill environment. This supplied a vast food resource base for the plains inhabitants.

The Late Prehistoric Period (ca. A.D. 200 to A.D. 1800) peoples exploited the plentiful food resource, the bison. The bow and arrow provided the hunters with new technology, coming into use about A.D. 200. The plains inhabitants again become specialized big game hunters. The Avonlea Phase (ca. A.D. 200 to A.D. 700) and the Old Women's Phase (ca. A.D. 700 to A.D. 1725) represent these communal bison hunting plains groups (Davis 1966; Forbis 1962).

Bison also played an increased role as a food source in the intermountain area generally at elevations below 5,000 feet (Swanson 1972: 193). The presence of mountain sheep above 5,000 feet and the absence of bison above 7,000 feet reduced the importance of bison as a food source at locations of higher elevation.

By the Late Prehistoric Period, influences of White occupation of North America were being felt, most notably by the introduction of the horse into the intermountain area by approximately A.D. 1720 (Ewers 1955:8). The pedestrian nomads realized the horse's potential and maximized their range and social contacts by utilizing the horse (Ewers 1955:331). With the expedition of Lewis and Clark through the area in 1805-06, the prehistoric era of the Northwestern Plains ended.

Historically, the Deep Creek-French Creek basin is intimately tied to mining and ranching activities. In 1865 (Berthold 1973:22), gold discovered in French Gulch resulted in placers being established in French Gulch and along Oregon Creek (Fig. 5). Extensive canals constructed to supply water for these operations can still be seen above the placer operations. Reworking of the exhausted claims along French Creek by the Chinese persisted until a dredge was constructed in the stream about 1898 (Berthold 1973:24). Eventually the gold petered out. A newly established Anaconda Mining Company in need of mine timbers transformed the small mining town in French Gulch into a lumber camp, use of which was discontinued in 1920 (Howard 1975:51).

Currently, the most prominent features in the basin result from ranching activities. Construction of houses, barns, corrals, fences, and roads has left its mark in the basin.

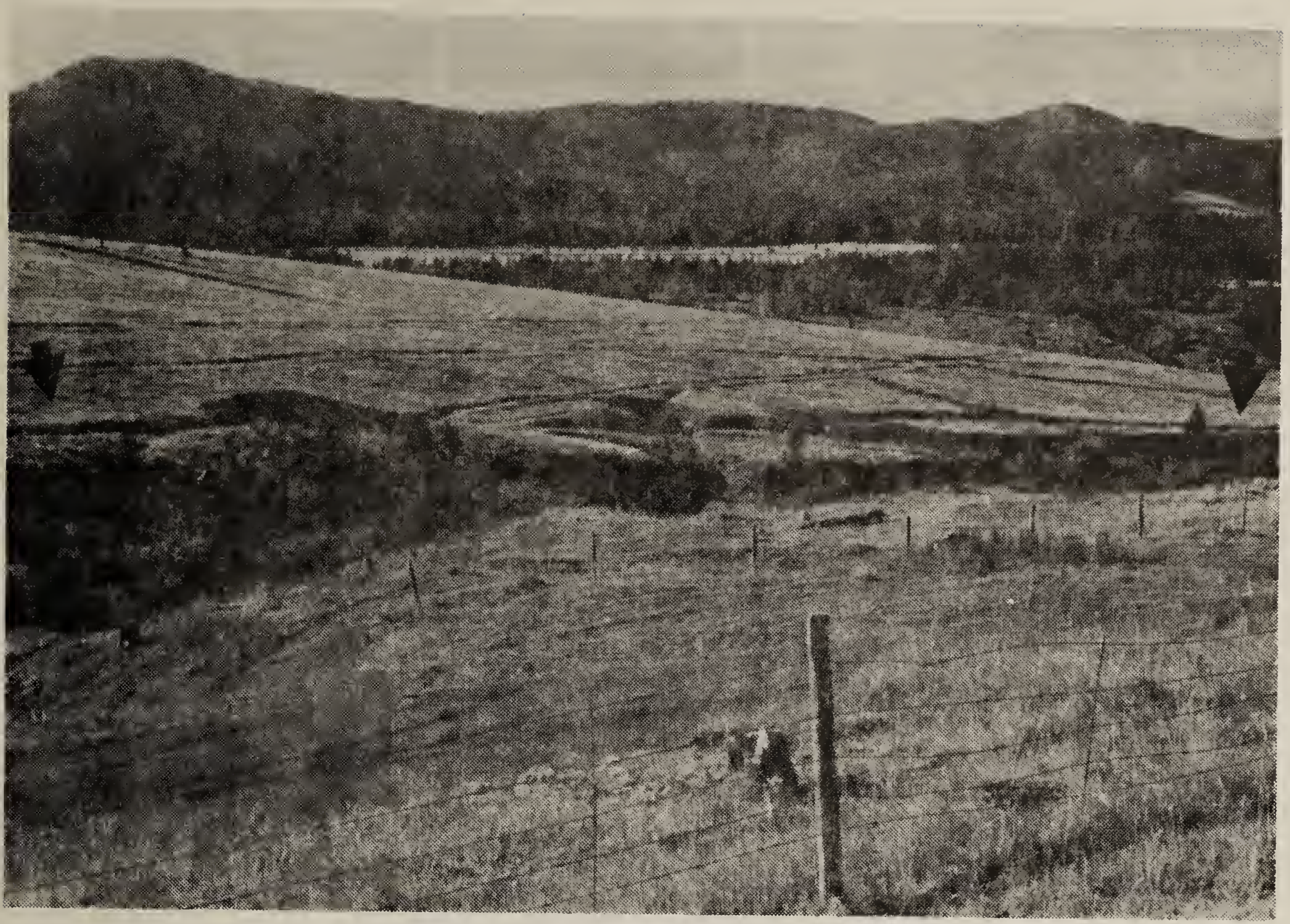

Figure 5. Placer operation along Oregon Creek, with extensive canal network visible above the placer cuts.

IV.

FIELD PROCEDURES, ARTIFACT AND SITE DESCRIPTIONS

Options available in conducting an archaeological survey have been lumped into two categories (Mueller 1974), as either intensive or extensive. The primary difference relates to the thoroughness of ground coverage. The 1978 Deep Creek-French Creek survey is best described as an intensive survey. The systematic approach adopted for site identification and collection of associated artifacts permits interpretation of the locality's characteristic use pattern.

IV.1 Survey Procedures

A pedestrian survey was designed to cover 100 percent of the ground, to examine all land form types existing in the study locality. Boundaries for daily survey tracts were established using prominent landmarks such as roads, fences, streams, and ridges to avoid duplication of effort. The size of these tracts varied depending on the number of sites anticipated in any particular area. If accessible, the vehicle was driven to one corner of the tract and used as a reference point. The first transect was along one edge of the tract, to the far side of the tract. Once the distant side had been reached, transects were plotted leading back to the vehicle. These transects were generally parallel, following land contours at approximately 20 to 30 meter intervals. Special attention was given to eroding or wind deflated terrace edges and stream cutbanks. These parallel transects were interrupted when a site was located. The site perimeter was identified, artifacts collected, photos taken, and notes recorded, before the parallel transects were resumed. In the evening, artifacts collected during the day were washed, and preliminary site reports were completed for each site.

Sites identified by the 1977 reconnaissance were treated in the same manner. As they had only been located on USGS 7.5 minute topographic maps, site boundaries were checked and additional photos and collections made before completing the site reports.

At the conclusion of the survey, final site reports were completed and artifacts catalogued. A standard Smithsonian trinomial site number obtained from Dr. Dee Taylor of the University of Montana was assigned to each site. Artifacts were catalogued with the site number and consecutive artifact number inked on each artifact (consecutive numbers beginning with one were assigned for each site).

Lithic samples, composed of waste flakes, were catalogued using only the last three digits of the site number; the three digits inked on the flake identify each flake only as to site. Collections from the 1977 reconnaissance were combined with the 1978 collections.

The effectiveness of locating sites at any particular location was dependent on recent geological activity and ground cover. Past overgrazing and subsequent wind deflation which has prevented revegetation on many of the terraces and ridges, proved useful in exposing archaeological manifestations. Mining activities, however, usually destroyed land forms which may have once contained evidence of some prehistoric activity. Extensive contour ditching to obtain water and placer operations along the stream bottoms precipitated slumping of remaining sediments and elimination of possible cultural deposits in the stream floodplain.

Visibility was a problem in low areas, primarily along perennial channels and to some extent around springs and seeps where a depositional environment exists. In these areas, recent deposits of sediments and rank ground cover of grasses, sedges, and willow obstructed the view of the surface. Occasionally, the presence of an eroding game trail, rodent digging, or cutbank provided some relief by allowing a limited view of the surface and/or subsurface.

IV.2 Artifact and Feature Description

Artifacts are remains of human activity and, as such, form the data base for the archaeologist. Modifications of natural materials such as stone, bone, antler, hide, and fiber were made during the manufacture of a variety of tools, utensils, clothing, and shelter.

Due to the nature of surface conditions at sites located during the survey, artifacts made of organic materials have long since succumbed to destructive weathering elements. Lithic tools and waste flakes however remain and comprise 100 percent of the cultural material collected during the survey. Tools have been sorted into groups based on use determined from the gross morphology of each artifact.

Projectile points (40 specimens, Plates 1 and 2). The common term "arrowhead" fails to identify the variety of projectiles utilized by prehistoric man. Hand thrusting spears, atlatl darts, and arrows were the three types of missiles used in the pursuit of game and for protection. Variations in size and morphology of points reflect these differences (Fig. 6).

The spear, with its large lanceolate point, was utilized by the big game hunters of the Early Prehistoric Period. The fluted points of the Clovis and Folsom Complexes are not represented in the collections from the study area. The somewhat smaller points that tipped atlatl darts are well represented in the collections (Fig. 6e-1). A mechanical advantage was achieved by the atlatl or throwing board, by increasing the speed and impact shock of the thrown projectile. The atlatl was effective on a greater variety of game animals, probably

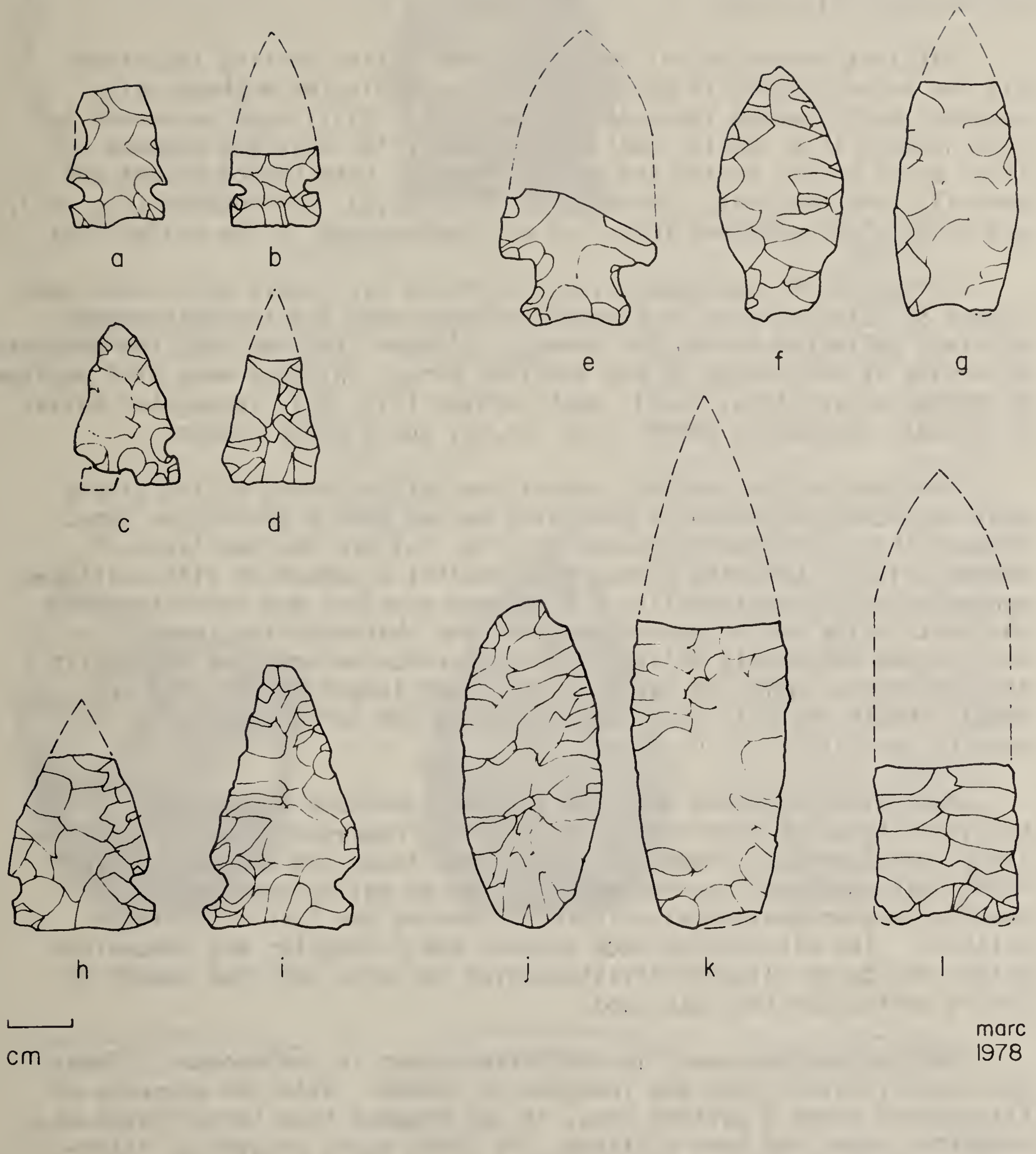

Figure 6. Projectile points; Late Prehistoric Period, Old Women's Phase (a-d), Middle Prehistoric Period, Hanna Phase (e), Duncan Phase (f), McKean Phase (g), Bitterroot Phase (h,i), Early Prehistoric Period, Agate Basin Complex (j,k), Cody Complex (l).

making it a favorite weapon during the Middle Prehistoric Period.

The hallmark of the Late Prehistoric Period is the bow and arrow which first appeared approximately A.D. 200. The light weight projectile point, dictated by the projectile system, is represented in the collections (Fig. 6a-d).

Distinct morphological variations reflecting hafting techniques aid the archaeologist in dating intervals within the archaeological record. Early Period lanceolate points (Fig. 6j-l) were succeeded by side-notched (Fig. 6h,i), small lanceolate (Fig. 6g), and stemmed (Fig. 6e,f) points during the Middle Period. Late Period points are generally the smallest; side-notched (Fig. 6a,b), tri-notched (Fig. 6c), and triangular unnotched (Fig. 6d) are represented in the collections.

Bifaces (230 specimens, Plates 3, 4 and 5). Tools which have been flaked on both surfaces to create a cutting edge are the most common artifact collected during the survey. Bifaces also manifest the greatest diversity in morphology of any artifact group. Bifaces were distinguished as hafted knives (Fig. 7a,b), ovate knives (Fig. 7c), triangular knives (Fig. 7d), lanceolate knives (fig. 7e,f), and a thick chopper.

The form of the proximal end of the biface served as the single most important criterion in assigning knives into a particular type. Stemmed (Fig. 7a), and side-notched (Fig. 7b) are the two types of hafted knives. Unhafted knives also exhibit a number of differentiated morphological characteristics. A rounded proximal end characterizes the ovate knife and a squared proximal end characterizes the triangular and lanceolate knives. The difference between the triangular and lanceolate knives is based on the width:length ratio. The triangular knife ratio is less than 1:2 while the lanceolate ratio is greater than 1:2.

Much discussion has occurred in the literature concerning specific styles of unhafted knives as being representative of particular cultural phases. However, it has been shown (cf. Roll and Deaver 1978) that continued use and resharpening of knives results in considerable morphological differences during the life of a single artifact. The distinction made between the triangular and lanceolate knives may be an illusory division which reflects only the length of time a particular tool was used.

The largest implement in the biface group is the chopper. These are usually quite thick and irregularly shaped. With the presence of flake scars along a cutting edge, it was assumed that large flakes or exhausted cores had been utilized, the flake scars created by intentional resharpening or through use.

Also within the biface group are numerous distal and mid-section fragments of bifacially worked tools. Their fragmentary nature, preventing reconstruction or visualization of the complete tool, led to their being placed in an undifferentiated biface group.

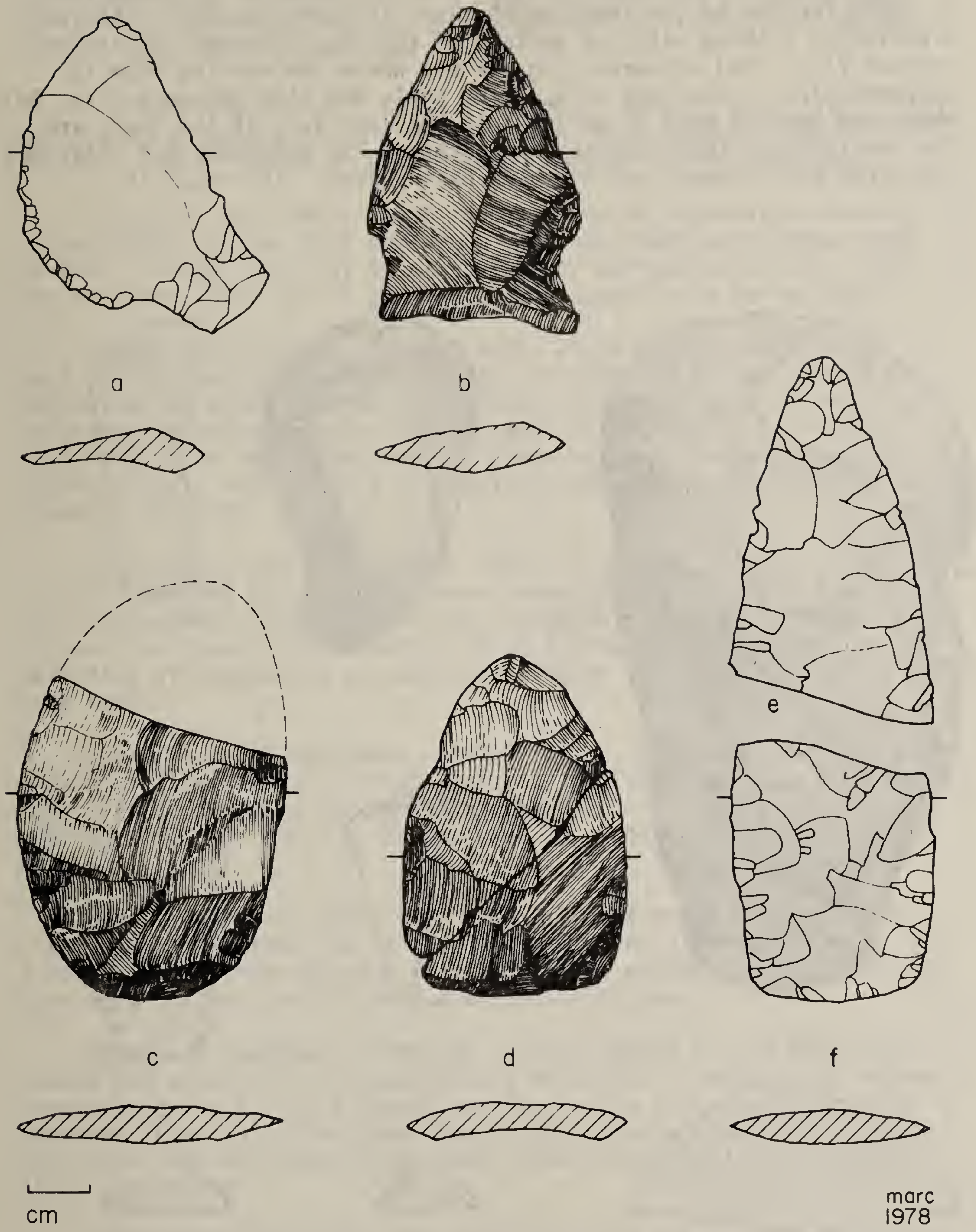

Figure 7. Bifaces: stemmed hafted knife (a), side-notched hafted knife (b), ovate knife (c), triangular knife (d), lanceolate knife (e,f).

Scrapers (34 specimens, Plate 6). This unifacially flaked tool is characterized by the steep bevel along its working edge. This was achieved by flaking only one surface of the tool, leaving the ventral surface flat. End scrapers (Fig. 8a-c), where the working edge is perpendicular to the long axis of the tool, and side scrapers (Fig. 8d), where the working edge is parallel to the long axis of the tool, are the two types collected during the survey. Two specimens (cf. Fig. 8a) are large end scrapers and may have been hafted. This tool is

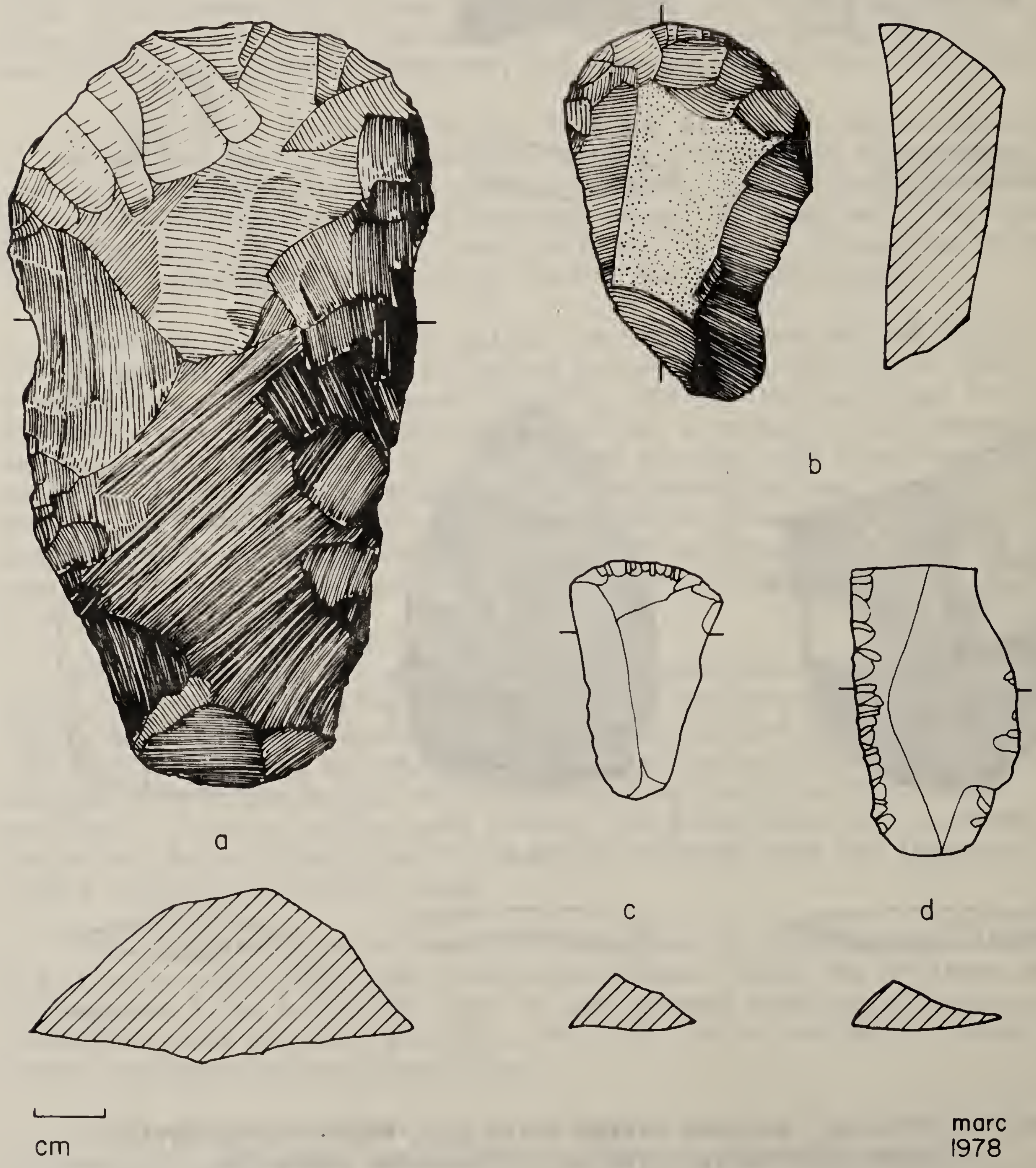

Figure 8. Scrapers: end scrapers (a-c), side scraper (d).

associated with the dressing of hides. Generally held in the hand, the tool is pulled across the inside surface of the hide to remove fatty tissue and meat residues.

In the absence of artifacts composed of organic materials, lithic tools used to work bone, antler, hide, and wood suggest some of the original organic parts of prehistoric peoples' varied tool kits.

Drills (4 specimens, Plate 7a-c). Used to perforate a variety of materials such as bone and wood. The specimens were either made on small flakes (Fig. 9a) or at the end of narrow blades (Fig. 9b). One specimen (Fig. 9a) is side notched, suggesting a hafted tool.

Graver and Burin (1 specimen each, Plate 7d,e). Both tools were used in working bone and antler, scoring the cortex prior to splitting the bone into smaller pieces. They were made on small flakes to produce a thick, beveled scoring edge (Fig. 9c,d). The burin (Fig. 9d), with its characteristic flake pattern, is considered a superior tool, representing a technical improvement above the graver (Semenov 1964:94).

Pièce esquillée (1 specimen, Plate 7h). This tool (Fig. 9g) is characterized by a concave-convex working edge. The tool is thick in cross-section, with steep hinge fractures along the inside curve of the working edge. Also referred to as a bone wedge, it aided in the splitting of long bones during butchering or in the manufacturing of bone tools.

Spokeshaves (4 specimens, Plate 7f,g). These tools were made on irregular flakes, with a steep unifacially flaked, concave scraping edge (Fig. 9e). Used for smoothing shafts, they are associated with wood working, but could have been used to smooth shafts made of bone also.

Adz (1 specimen, Plate 7i). The tool was made on a triangular flake, and the distal end is straight and bifacially flaked to create a wedge-shaped chopping edge (Fig. 9f). The adz was probably hafted, used as a cutting tool on wood and, possibly, bone.

Cores (77 specimens, Plate 8). Cores served as the source of flakes and blades for the manufacture of tools. A variety of shapes were noted, and a simple scheme was devised to sort the cores based on shape (Fig. 10). The plan view form of the core was used to sort the cores into discoidal (Fig. 10a), ovate (Fig. 10b), and tabular (Fig. 10c) types.

Reduction of the cores was carried out in a number of different ways. One technique was to utilize a hand held hammerstone (1 specimen, Fig. 11), striking the core to remove the desired flake. The other technique was to strike the core on a large, immobile anvil stone (Fig. 12). One anvil stone located during the survey had battered edges, with waste flakes scattered about the base of the stone.

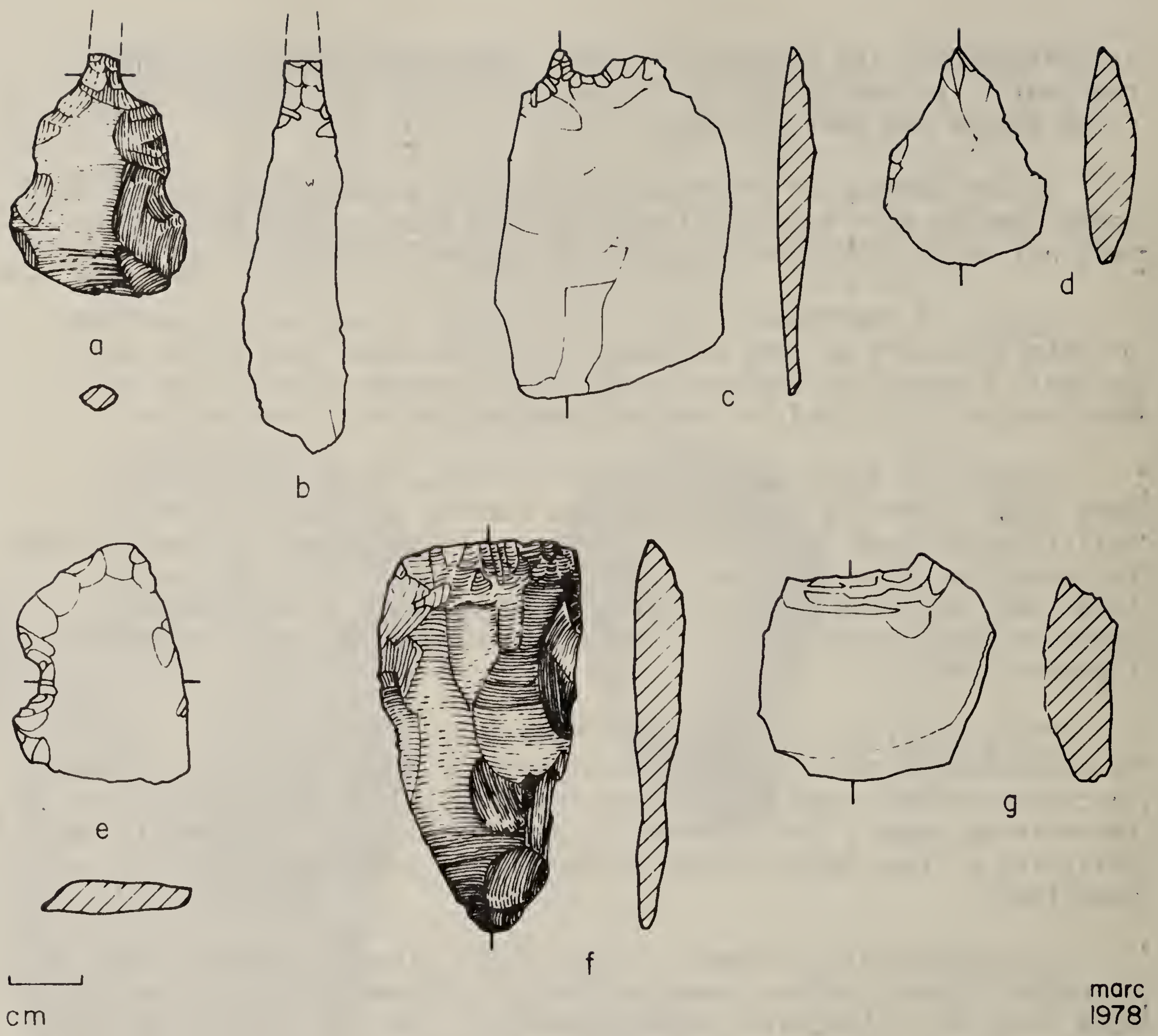

Figure 9. Miscellaneous lithic tools: drills (a,b), graver (c), burin (d), spokeshave (e), adz (f), pièce esquillée (g).

Modified flakes (27 specimens, Plate 7j-1). These tools exhibit a variety of working edges, ranging from scraping to cutting to chopping. Often, a fortuitous flake or exhausted core would be an acceptable tool which was then utilized for a brief period of time and then discarded. Minimal retouch resulting from use was occasionally combined with fine, intentional flaking to resharpen or reshape the working edge.

Features are a special class of artifacts which, because of their nature, prevent collection. They can be viewed as a result of two processes (Roll 1978:34): constructional and depositional. Constructed features are those which were constructed for some intended purpose such as hearths, shelters, and hunting blinds. Depositional features are unintentional deposits, by-products of some activity; middens from butchering areas, waste flakes from lithic tool manufacturing, and hearth residues fall into this second group.

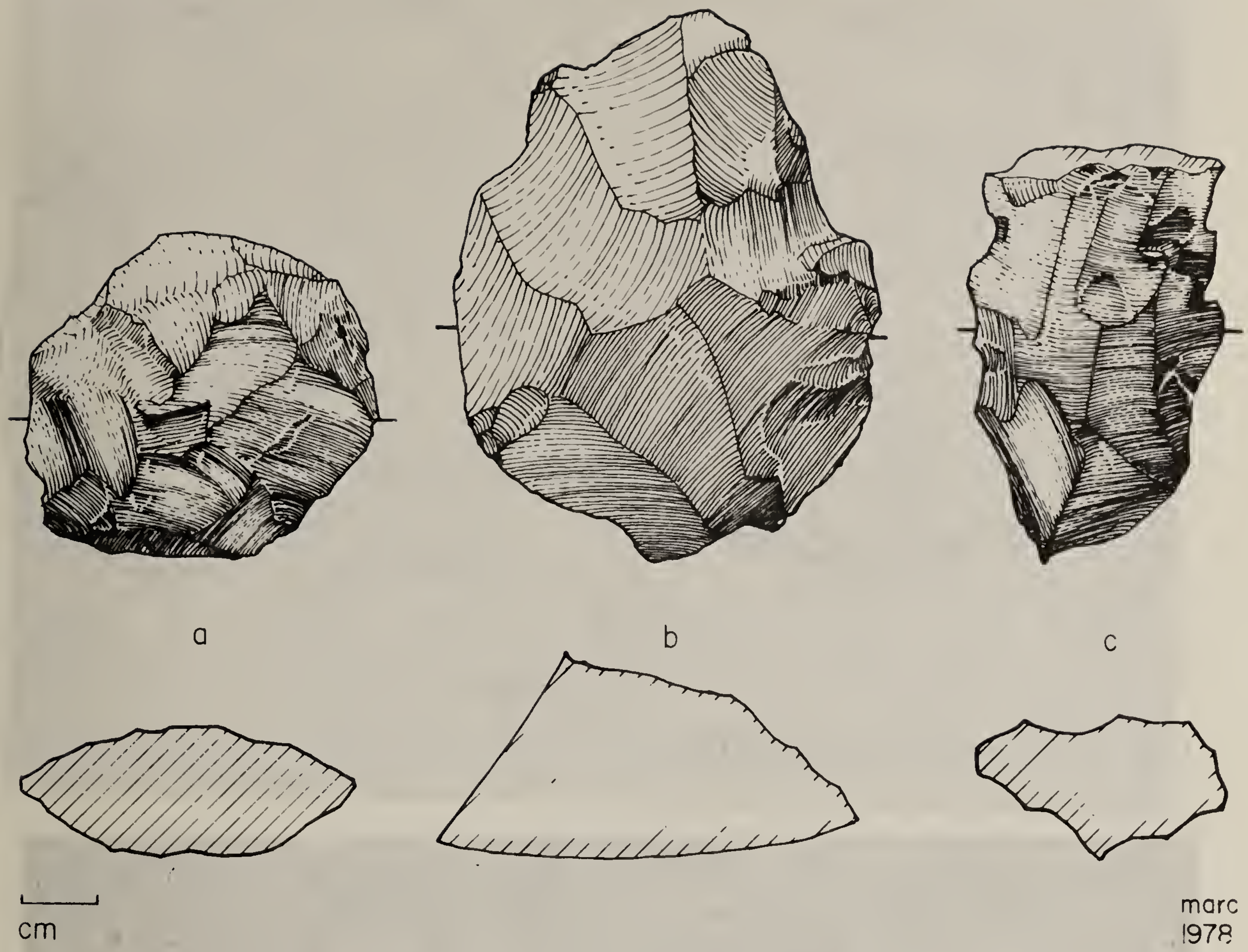

Figure 10. Cores; discoidal (a), ovate (b), tabular (c).

Stone circles (3 occurrences). Over the years considerable discussion has occurred concerning "tipi rings," the most prominent feature of the Northwestern Plains. Attempts have been made to identify culture groups with the rings, date occupations based on ring size, determine seasonal settlement patterns using size and associated features, all which would generally increase our understanding of prehistoric peoples (cf. Kehoe 1958; Malouf 1961; Mulloy 1958; Wedel 1961), but little has been achieved. To date, probably the only conclusion which can be made is that stone circles resulted from stones holding down some superstructure, probably hide, used for shelter (Frison 1978:51).

Stone circles identified in the study area are constructed from quartzite cobbles found in the glacial outwash deposits. Diameter of the features vary from 4.0 meters to 4.6 meters. Past erosion and disturbance of the stone circles makes the features hard to distinguish from their surrounding environment (Fig. 13).

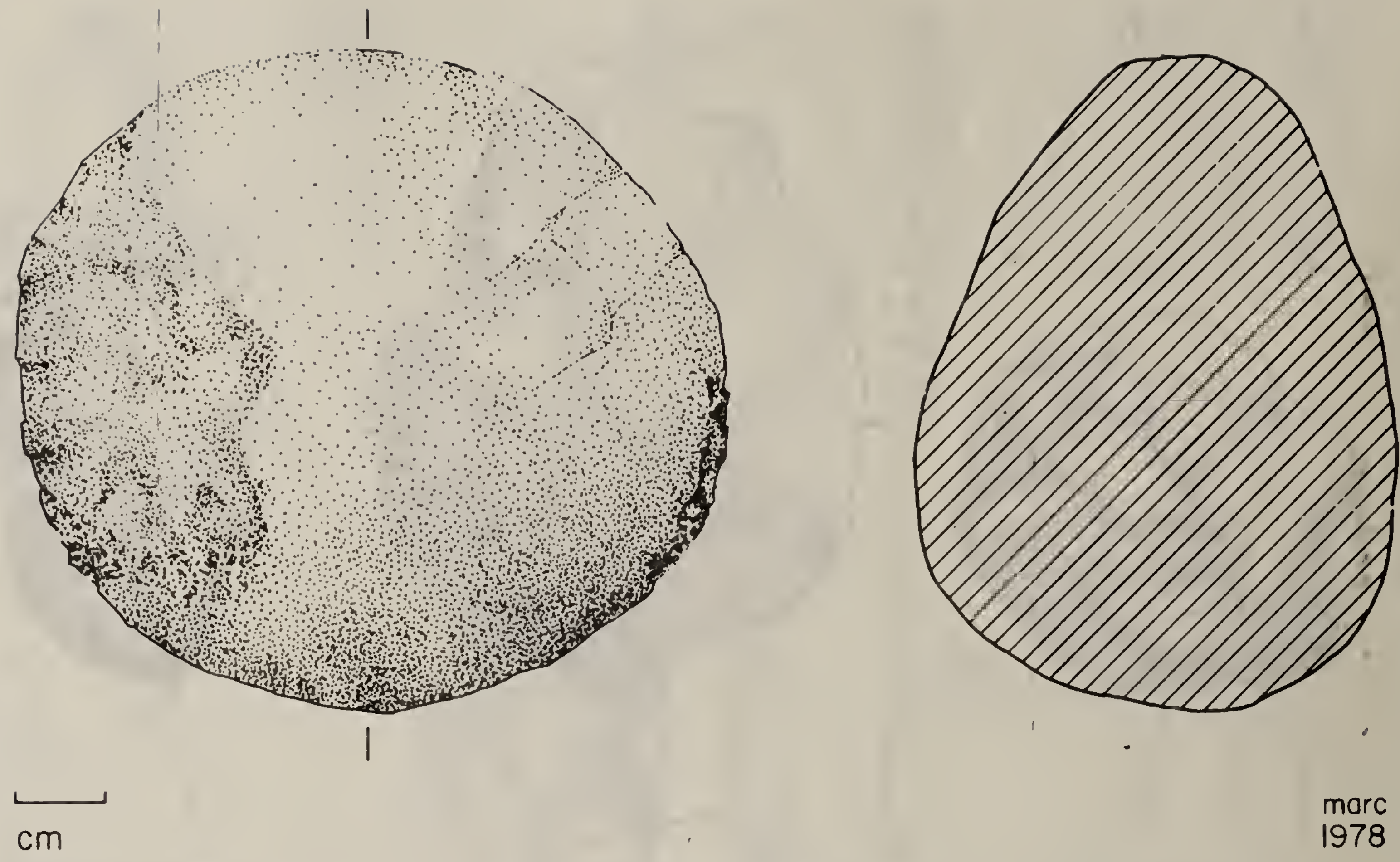

Figure 11. Hand held hammerstone.

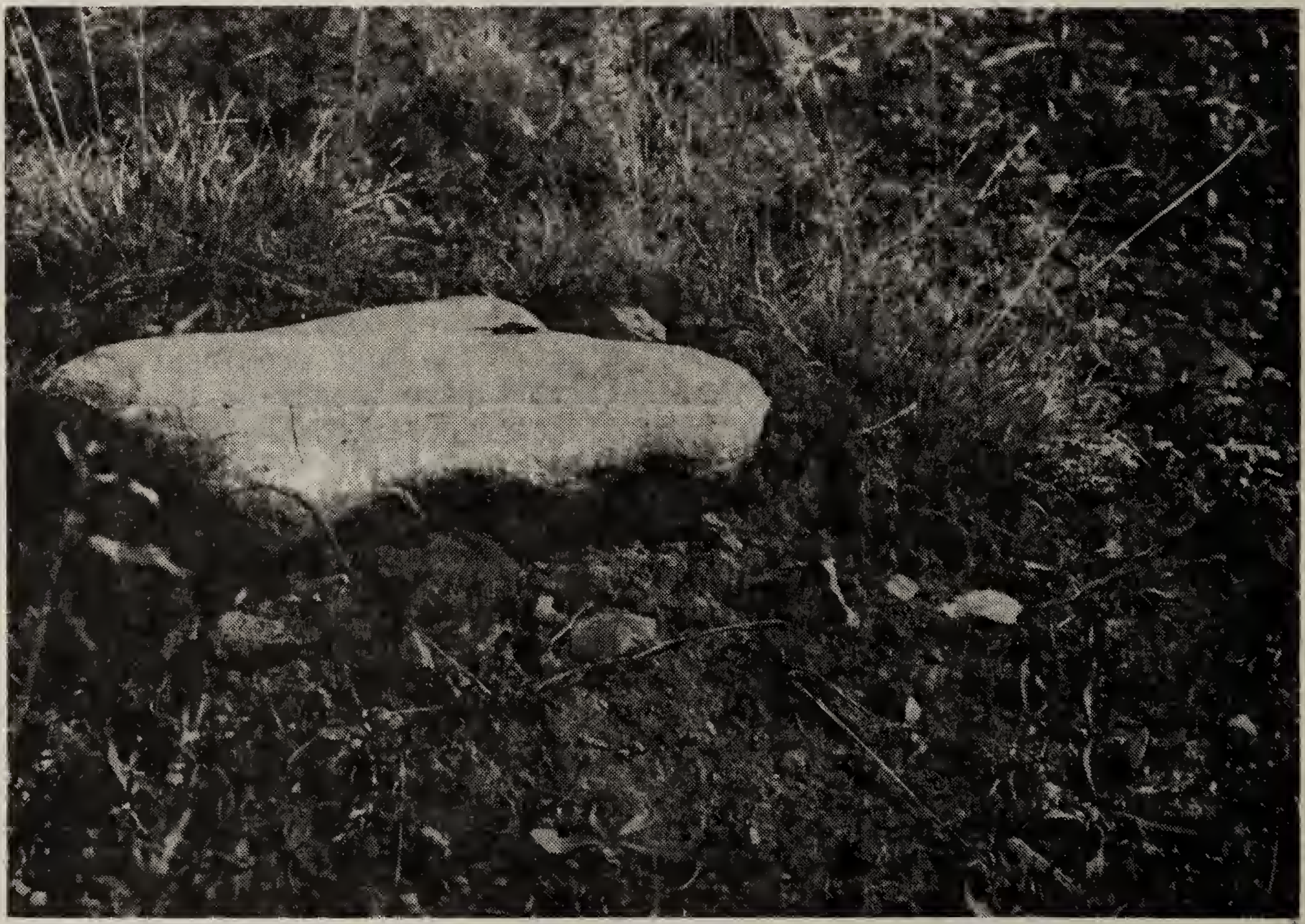

Figure 12. Anvil stone with associated lithic waste flakes (24DL158).

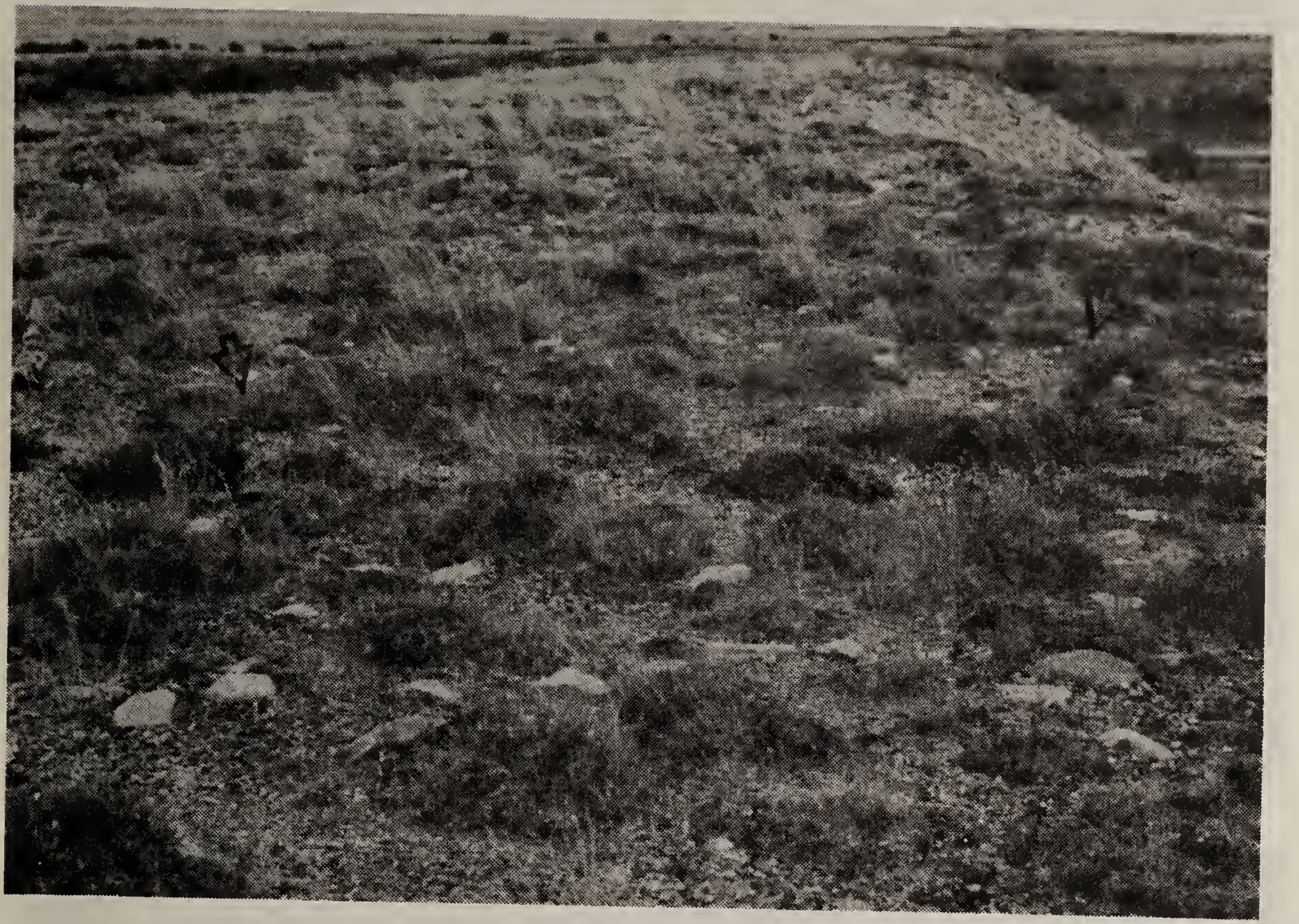

Figure 13. Stone circle constructed of quartzite cobbles, located at edge of terrace above French Creek (24DL138).

Cairns and Stone Piles (15 cairns and numerous stone piles). Constructed stone piles and cairns vary in size from three stones, to large circular structures two meters in diameter containing as many as 40 stones.

The smallest of the structures in the study locality - stone piles - occurred in a single drive line (Fig. 14). The small piles consist of quartzite cobbles collected from the glacial deposits and piled in numbers of three to eight stones along the desired path of a communal drive.

The largest of the structures - cairns - were usually solitary features (Fig. 15); however, several occur in pairs. These are larger than stone piles, circular in shape from one to two meters in diameter, and contain 10 to 40 quartzite cobbles which form a pavement on the surface. One cairn constructed of basalt rocks was built to a height of 50 cm.

Numerous explanations have been given for the occurrence of cairns. Secondary burials, boundary markers, or sites of religious significance have been offered as reasons for the construction of cairns. The cairns

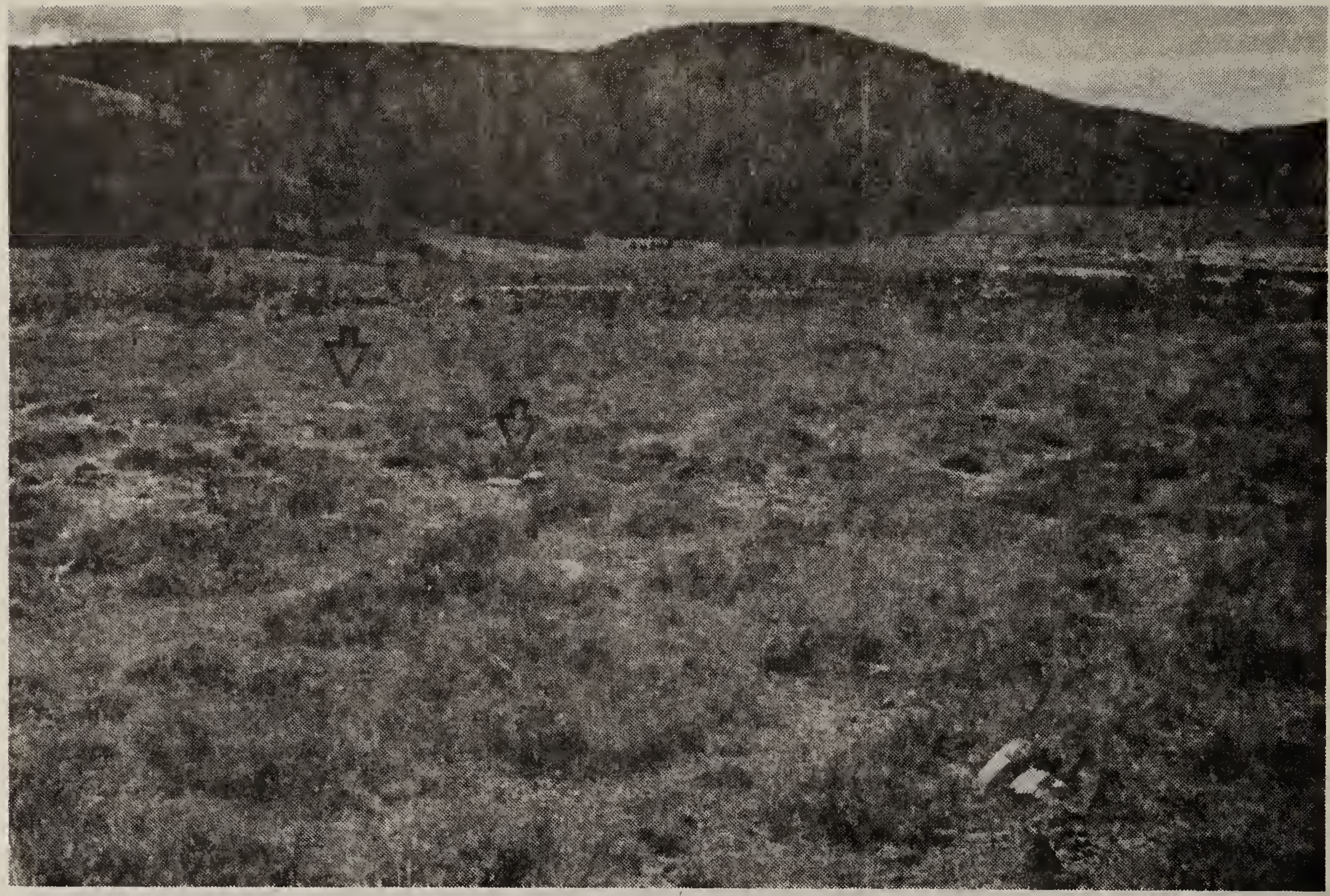

Figure 14. Drive line composed of rock piles along edge of terrace above French Creek (24DL147).

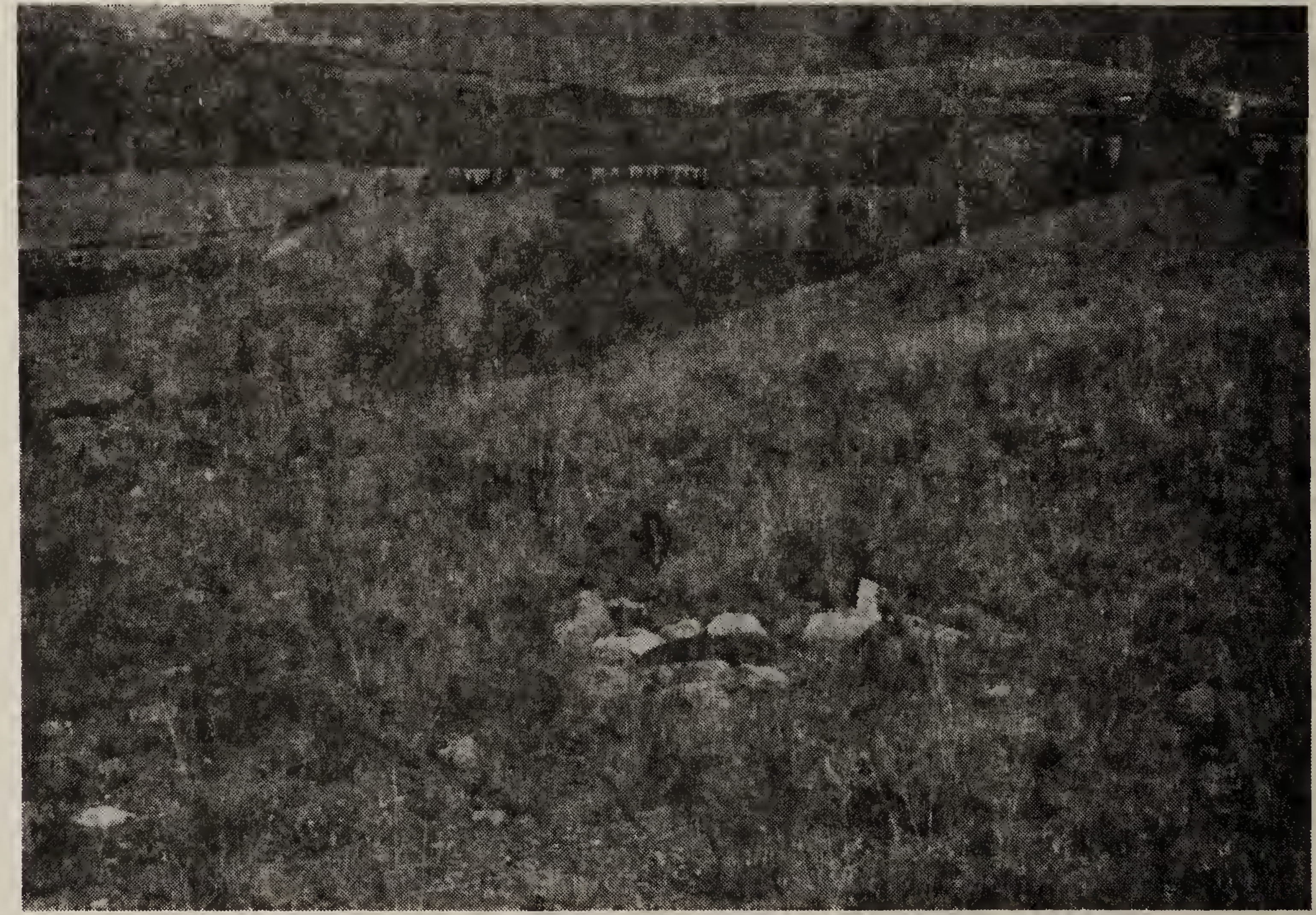

Figure 15. Isolated stone cairn on edge of terrace overlooking Deep Creek (24DL140).

in the study area yielded no clues as to their use, since the associated lithic material consists of scattered waste flakes and some broken tools.

Hearths (4 occurrences). Rock lined fire pits occur intact in only a few instances. Angular fire broken rock, however, is present in numerous sites, suggesting the original presence of hearths. In those instances where a hearth was identified, recent erosion had exposed it from beneath the surface, and continued erosion was actively destroying the feature (Fig. 16).

IV.3 Site Classification

An archaeological site can be described as ". . . the smallest unit of space. . . fairly continuously covered by remains of former occupation. . . pertain(ing) to (a) single unit of settlement," (Willey and Phillips 1958:18). However, numerous sites contain evidence that peoples of a number of cultural phases utilized the same space at different times. To distinguish these various occupations, the term "component" (Willey and Phillips 1958:21) is used.

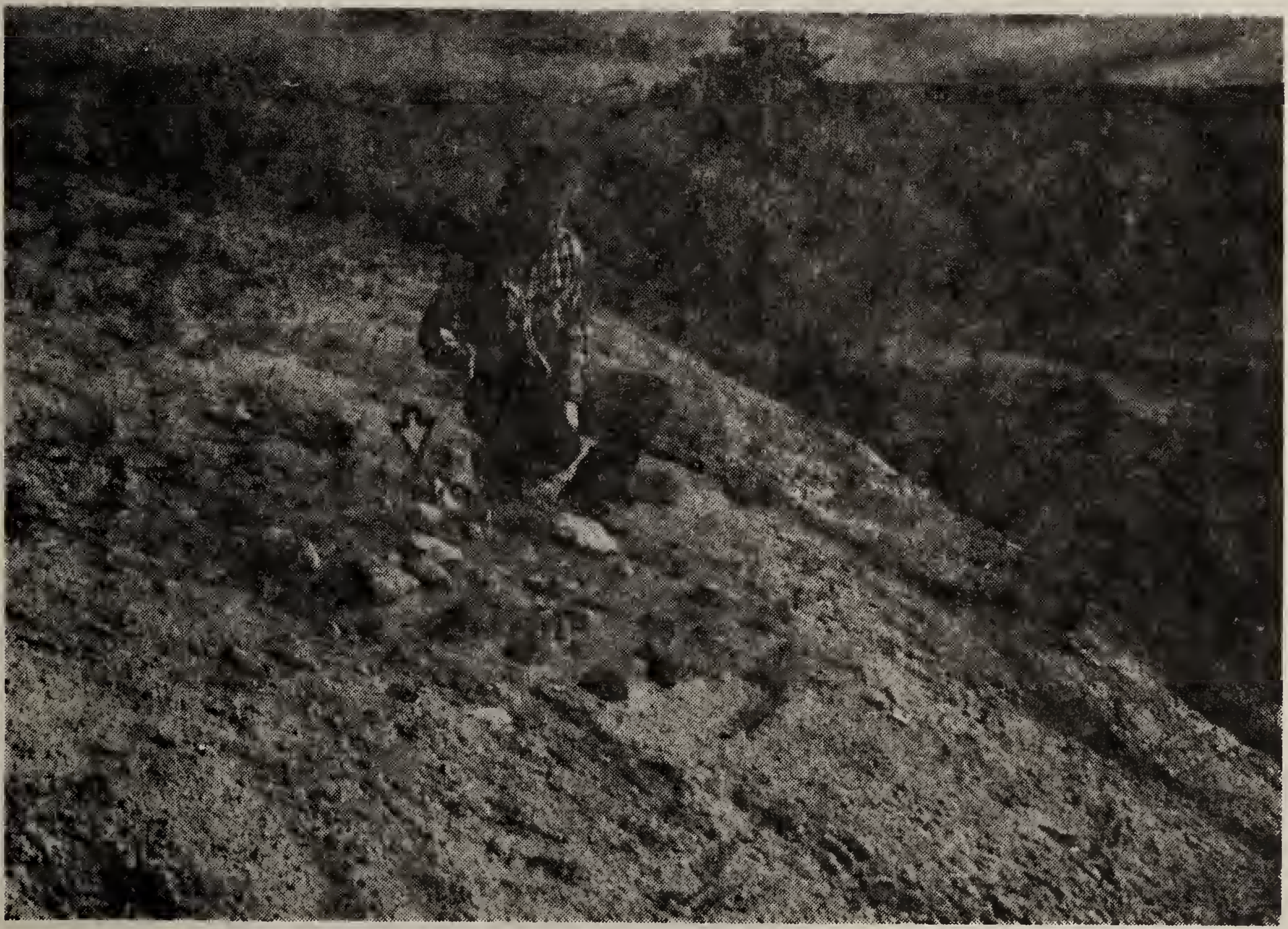

Figure 16. Recently exposed hearth continues to be eroded down clay bank above French Creek (24DL146).

Based upon the quality of cultural material observed at each site, a site classification system was adopted. The system assumes that varying degrees of use by prehistoric inhabitants can be determined by analysis of the archaeological record. The construction of features, particularly those associated with shelter, suggest greater utilization of a site and surrounding area by its inhabitants than does a site devoid of features.

Workshops are the lowest use level evident among sites recorded. Content consists of lithic waste flakes, tools, and tool fragments. The absence of features suggests a most transient use of the area.

Occupations are sites considered to represent a mid-level use. Some features (cairns and hearths, or fire broken rock indicating the past presence of hearths) were necessary to designate a site as an occupation site.

Habitation sites represent the highest level of site use identified in the study area. Occurrence of stone circles, indicating a domestic shelter, was the sole criteria for sites being designated as habitation sites. Within habitation sites, other cultural manifestations were also observed.

One specialized use area is also present: a drive line, constructed to aid in the procurement of bison or other herd animals.

Evidence of historic activity is abundant. Major complexes created by mining or ranch activities were given historic site designations. Numerous isolated sheds noted in the study locality were neither recorded nor given site status.

V.

ARCHAEOLOGICAL RESOURCES IN THE DEEP CREEK FRENCH CREEK LOCALITY

The basin's physiography influenced prehistoric utilization preferences by the nature of resource distribution and topography. Recovery of the archaeological record is dependent on recent erosional patterns which expose the deposits. The quality of the exposed and preserved material is the basis for generalizations about the age and distribution of prehistoric peoples.

V.1 Site Distribution

Site distribution in the Deep Creek-French Creek basin centered at the lower elevations on the relatively level surfaces provided by glacial outwash and alluvial terraces (Fig. 17). The homogeneous physiography and proximity of utilized resources such as water, wood, game animals, and lithic source material, may explain the absence of concentrated use areas within the study locality. However, preferences can be detected. The edges of prominent terraces along perennial stream channels and terrace surfaces around springs and seeps usually yielded evidence of prehistoric utilization.

As the slope and elevation in the northwest and southeast corners of the study locality increased, a definite decrease of cultural material was noted. Based on findings of the 1977 reconnaissance, this trend persists into the steeper, wooded slopes which surround the basin. Reported high elevation game traps (Frison 1978), particularly the LaMarche Creek trap immediately south of the Deep Creek Drainage (Keyser 1974), suggest the existence of different utilization patterns at higher elevations. The possibility of such prehistoric manifestations should be considered in areas adjacent to the study locality.

The basin's physiography also influences the recovery of archaeological material. The high surface visibility and stability on the glacial outwash terraces, provides an excellent environment for detecting cultural deposits. However, the stable or slightly eroding terrace surface tends to consolidate any repeated prehistoric occupations. Different components of this undifferentiated cultural deposit can be identified using projectile point typologies.

More active environments such as alluvial terraces and flood plains create other types of problems. Site manifestations of unknown size and content are created by either obscuring or eroding the cultural deposit. The existence of undetected sites is also possible.

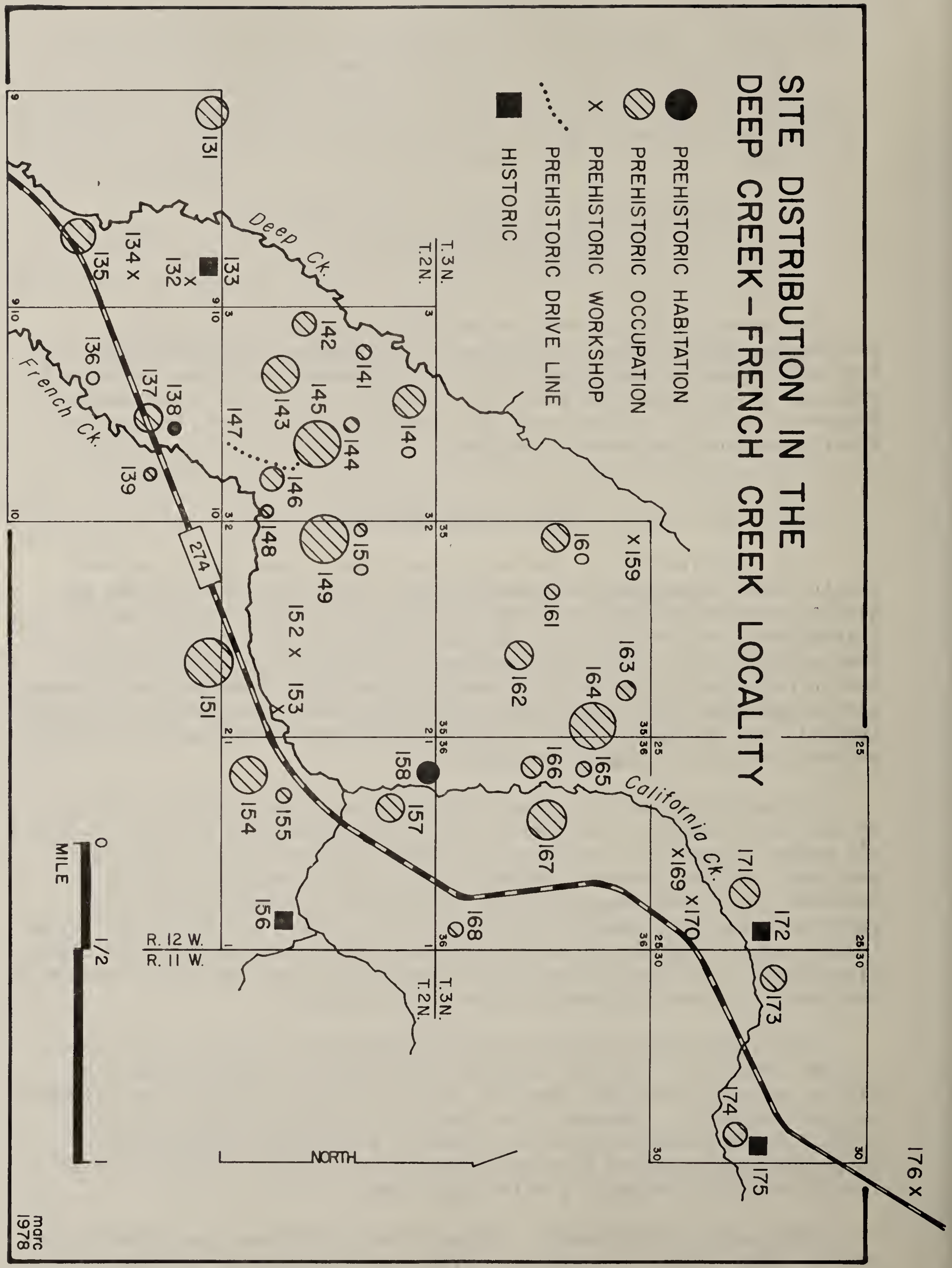

Figure 17. Site distribution in the Deep Creek-French Creek Locality.

In the 1978 survey, these problems aggravated by particular microenvironments can be seen in the results of site (or component) detection and identification (Fig. 18). Identification of site components reflects those advantages or problems created by particular landforms. The glacial outwash terrace environment resulted in predominantly surface sites of which 67 percent were identified. At the other extreme, only 17 percent of buried flood-plain sites were identified.

V.2 Identified Site Components

Site components were identified by the typological cross-dating of projectile points. Stylistic variation among projectile points is the key to assigning isolated point finds to a specific cultural manifestation. The projectile point is the artifact for which typological cross-dating has been most consistently successful in the Northwestern Plains. Problems arise, however, when the isolated artifact is only fragmentary, or when morphology exceeds the acceptable limit of type variation.

Identifiable projectile points collected during the survey show that human activity in the Deep Creek-French Creek basin began about 10,500 years ago, and persisted fairly continuously into the present. The earliest culture groups of the Early Prehistoric Period,Clovis and Folsom,are not represented in the collections. However, Montana Clovis sites at MacHaffie in the upper Missouri drainage south of Helena (Forbis and Sperry 1952) and in the upper Yellowstone drainage near Wilsall (Lahren and Bonnichsen 1974), and numerous finds of Folsom material in the upper Snake River area of Idaho (Butler 1978) indicate that these early peoples frequented the vicinity.

The earliest dated human activity was by specialized plains big game hunters (Table 1). Agate Basin Complex (ca. 10,500 to 9,500 B.P.) is represented by components at sites 24DL143, 24DL146,and 24DL158. A somewhat later group, the Cody Complex (ca. 9,500 to 8,500 B.P.), is represented by a component at 24DL151. Both culture groups were predominantly bison hunters of the plains (Frison 1978; Irwin-Williams et al. 1973; Knudson 1973).

A projectile point base of an unidentified late Plano Complex (ca. 8,500 to 7,500 B.P.) was collected at 24DL146.

The Middle Prehistoric Period is by far the best represented in the survey collections (Table 2). A mountain-adapted, big game hunting group which persisted throughout the Altithermal (Swanson 1972), the Bitterroot Phase (ca. 7,500 to 3,500 B.P.), was identified at 24DL135, 24DL145, 24DL151, 24DL161, 24DL164, and 24DL166.

Occupation by plains groups, the McKean Phase (ca. 4,500 to 3,500 B.P.) and the Duncan-Hanna Phase (ca. 3,500 to 3,000 B.P.) occurred during the last half of the Middle Prehistoric Period. The McKean Phase is represented at sites 24DL149 and 24DL158; the Duncan Phase at 24DL149; and the Hanna Phase is represented by components at 24DL132, 24DL143,

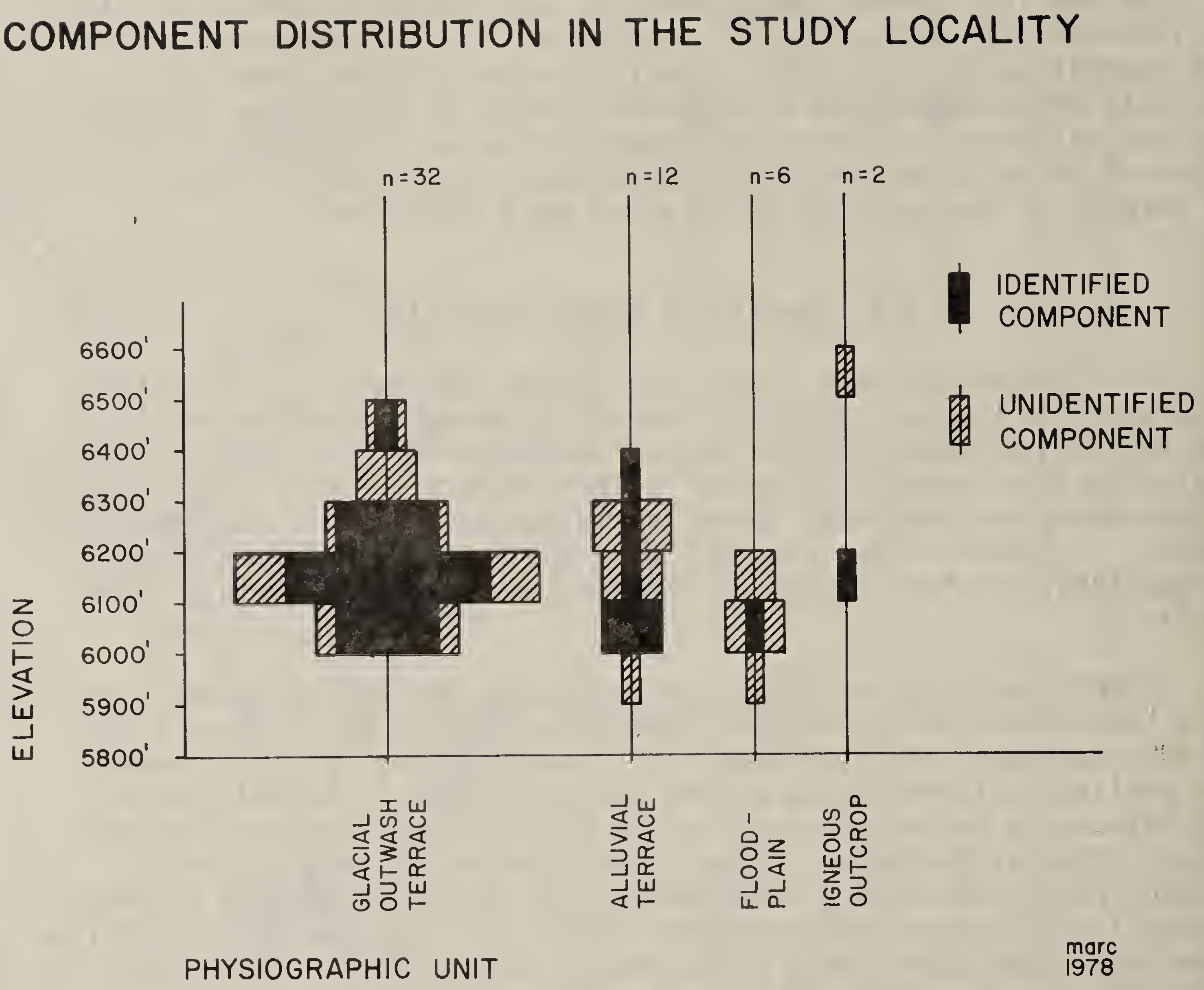

Figure 18. Distribution of identified sites or components in study locality.

24DL145, 24DL150, 24DL152, 24DL158, 24DL167, 24DL171,and 24DL174. These Middle Period peoples are found throughout the plains and mountains (Frison 1978; Wedel 1978), and appear to have been most creative in exploiting their immediate environment.

In both the Northwestern Plains and Great Basin areas, the late Middle Prehistoric Period is represented by a corner-notched projectile point. In the plains they have been named the Pelican Lake Phase (ca. 3,000 to 1,750 B.P.), first identified in southcentral Saskatchewan (Wettlaufer 1955). Manifestation of Pelican Lake occurs at 24DL138 and 24DL161. The specimens are of poor quality and identification is tentative.

The Late Prehistoric Period is represented at only a few sites (Table 3). The Old Women's Phase (ca. A.D. 700 to A.D. 1725), a specialized plains bison hunting tradition, is represented at 24DL135 and 24DL140.

TABLE 1. ARTIFACT ASSEMBLAGES FROM SITES WITH EARLY PREHISTORIC PERIOD COMPONENTS

Site Number	Cultural Affiliation	Site Type	Projectile Points	Hafted Knives	Ovate Knives	Triangular/Lanceolate Knives	Choppers	Undifferentiated Bifaces	Scrapers	Drills	Gravers	Burins	Spokeshaves	Adzes	Pièce Esquillée	Cores	Hammerstones	Modified Flakes	Fire Broken Rocks	Lithic Waste Flakes	Stone Circles	Cairns	Hearths	Drive Lines	Anvil Stones
24DL143	Agate Basin	occupation	2		3		1	3	5		1					1			X	X			1		
**24DL146	Late Plano Agate Basin	occupation	2		6		13	17	1							4		1	X	X			1		
24DL151	Cody	occupation	3	1	5	4		7	5	3						3		2	X	X		1			
24DL158	Agate Basin	habitation	3	1	3	3	5	5	7			1	1			9			X	X	2				1

**Early Prehistoric Period components only

Tentative classifications of Avonlea Phase (ca. A.D. 200 to A.D. 700) at 24DL151 and an undetermined Late Period manifestation from 24DL161 were made. Avonlea represents the early Late Prehistoric Period bison hunters of the plains. Their range has been described (Davis 1966) as the northern plains of Montana and adjacent Canadian provinces. Occurrence of Avonlea in the intermountain area of Montana would place it somewhat beyond its documented range. The artifact is a projectile point base fragment, making positive identification difficult. Swanson (1972:112) has described a point of similar morphology in the Great Basin Area. Designated as the Blue Dome Phase, Swanson (1972) states that it is a step between the earlier Bitterroot technology and the Late Plains technology, probably used to hunt buffalo. In any event, the component identified by this fragment at 24DL151 seems to be of the early Late Prehistoric Period.

A Late Period component was designated for 24DL161, based on a projectile point which did not fit into any of the Northwestern Plains typologies. Identification is tentative at best, but the small, finely made point suggests a Late Period affiliation.

The four designated historic sites represent the major historic manifestations in the area. The buildings at Home Ranch, 24DL133, and

TABLE 2. ARTIFACT ASSEMBLAGES FROM SITES WITH MIDDLE PREHISTORIC PERIOD COMPONENTS

Site Number	Cultural Affiliation	Site Type	Projectile Points	Hafted Knives	Ovate Knives	Triangular/Lanceolate Knives	Choppers	Undifferentiated Bifaces	Scrapers	Drills	Gravers	Burins	Spokeshaves	Adzes	Pièce Esquillée	Cores	Hammerstones	Modified Flakes	Fire Broken Rocks	Lithic Waste Flakes	Stone Circles	Cairns	Hearths	Drive Lines	Anvil Stones
*24DL132	Hanna	workshop	1													1				X					
24DL135	Bitterroot	occupation	2		3			1	2										X	X			2		
*24DL138	Pelican Lake	habitation	1				3									1		3	X	X	1	1			
24DL143	Hanna	occupation	2		3		1	3	5		1					1			X	X			1		
**24DL145	Hanna Bitterroot	occupation	4			1	5	3	1							6			X	X		1			
**24DL149	Duncan McKean	occupation	3		5	1	5	8	2	1						5			X	X		2			
*24DL150	Hanna	occupation		1															X	X					
24DL151	Bitterroot	occupation	3	1	5	4		7	5	3						3		2	X	X		1			
*24DL152	Hanna	workshop	1		2															X					
24DL158	Hanna McKean	habitation	3	1	3	3	5	5	7			1	1			9			X	X	2				1
24DL161	Pelican Lake Bitterroot	occupation	3		5	1		10	5							9			X	X					
*24DL164	Bitterroot	occupation	2					1								1			X	X		2			
*24DL166	Bitterroot	occupation	1		3	21	8	23	1	2			1			16		4	X	X					
*24DL167	Hanna	occupation	1		2		2	3	2							1			X	X					
*24DL171	Hanna	occupation	2	1												1			X	X					
*24DL174	Hanna	occupation	1		2	1	3	5	4					1		7	1	8	X	X					

*Single component sites
**Middle Prehistoric Period components only

Mule Ranch, 24DL172, were recorded as sites. The placer operation at Oregon Creek was recorded as 24DL175. All of the mining activity and associated builidings in French Gulch and adjacent areas is recorded as the French Gulch Mining District, 24DL156.

TABLE 3. ARTIFACT ASSEMBLAGES FROM SITES WITH LATE PREHISTORIC PERIOD COMPONENTS

Site Number	Cultural Affiliation	Site Type	Projectile Points	Hafted Knives	Ovate Knives	Triangular/Lanceolate Knives	Choppers	Undifferentiated Bifaces	Scrapers	Drills	Gravers	Burins	Spokeshaves	Adzes	Pièce Esquillée	Cores	Hammerstones	Modified Flakes	Fire Broken Rocks	Lithic Waste Flakes	Stone Circles	Cairns	Hearths	Drive Lines	Anvil Stones
24DL135	Old Women's	occupation	2		3			1	2										X	X			2		
*24DL140	Old Women's	occupation	4					3	2	1					1					X		1			
24DL151	Avonlea	occupation	3	1	5	4	7	5	3							3		2	X	X		1			
24DL161	Late Period	occupation	3		5	1		10	5							9			X	X					

*Single component site

VI.

SUMMARY

At the conclusion of the 1978 Deep Creek-French Creek survey, 46 sites (42 prehistoric and 4 historic) had been located and recorded. Of the prehistoric sites, 18 or 43 percent had single or multiple identified components. From my previous survey experience, this is an unusually high percentage of identified sites. The paucity of prominent features such as stone circles and large cairns which signal the presence of prehistoric sites for the casual collector and the intensive nature of the survey may account for this phenomenon.

The roving search for food by the early inhabitants of the Deep Creek-French Creek basin is recorded by numerous sites. Surface deposits of lithic waste flakes, fire broken rock, tools, and stone features suggest the lifeways of the early hunters and gatherers. From the terrace gravel they collected the plentiful cryptocrystalline silicate nodules, fashioning them into weapons for the hunt and simple household utensils. Mountain sheep, antelope and deer must have been important food sources in the basin, as bison reached the limit of their range. No evidence of vegetal processing implements was observed, suggesting that in the basin, hunting maintained a prominent position in the food quest.

The Middle Prehistoric Period is the best represented cultural period in the study locality (Fig. 19). Concurrent occupation of the basin by Bitterroot Phase and McKean Phase peoples raises some interesting questions. Represented by different weaponry systems of possibly different origins, it is unclear as to the extent other aspects of their lifeways differed (Butler 1978:69). Utilization of the intermountain area by established mountain-adapted groups and plains-adapted groups avoiding the harsh plains environment during the Altithermal may explain the intense utilization of the mountain/foothill environment during this time. The decline of plains bison populations during the Altithermal, with the maintenance of huntable populations of mountain sheep at the higher elevations (Swanson 1972:193; Wedel 1978:26), may have stimulated this use pattern.

The archaeological record is fragile, and it has already succumbed to recent human activity at some locations in the Deep Creek-French Creek basin. Placer and dredging operations have eliminated some stream terraces, leaving only fragments of the prehistoric record intact. The construction of buildings, fences and roads by ranching interests also take their toll. Erosion, often stimulated by overgrazing, first exposes and then destroys archaeological sites. Concerning those sites now known to remain, avoidance and protection should be a general management objective.

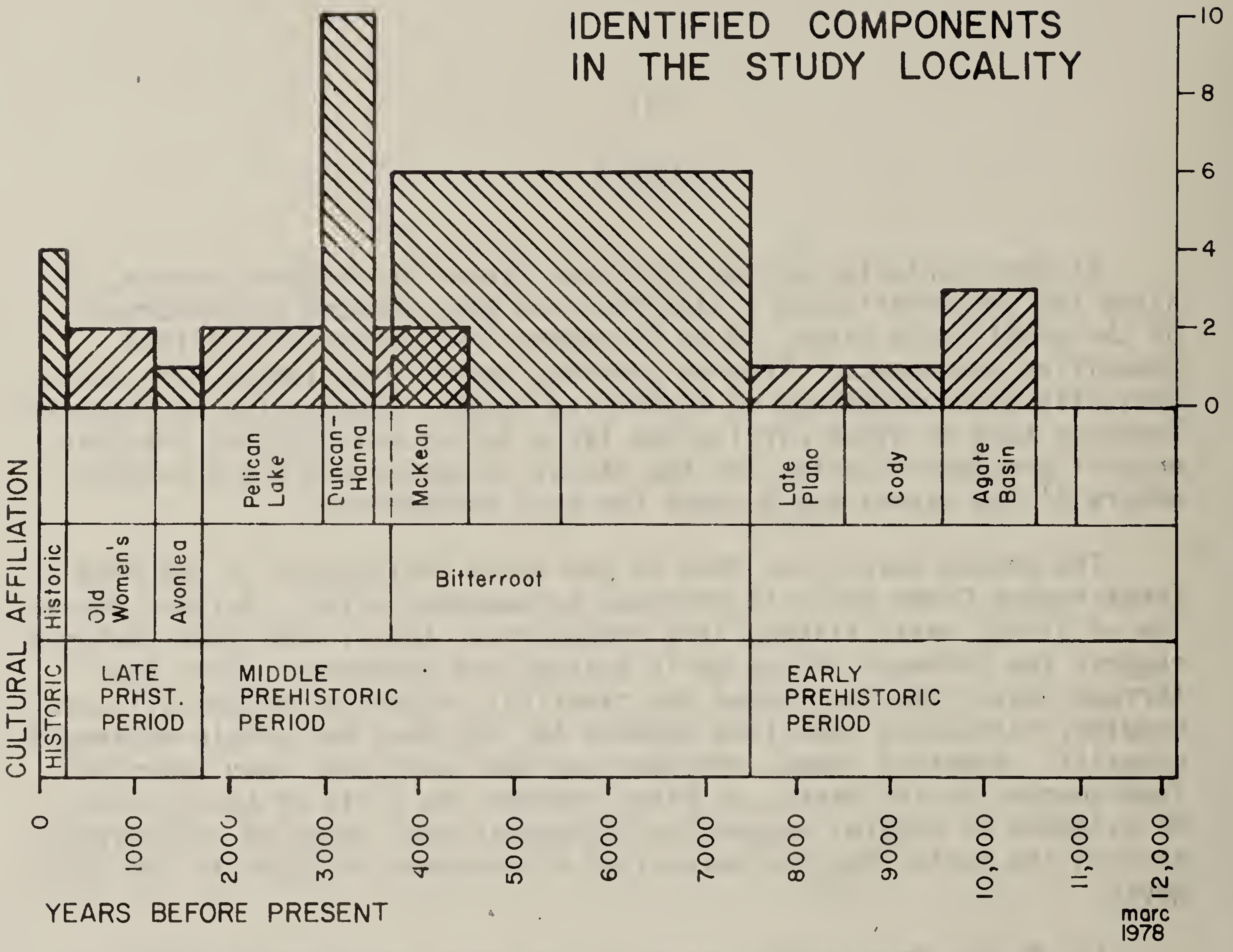

Figure 19. The occurrence of identified site components in the study locality.

Table 4 summarizes the location and cultural affiliation of those sites recorded during the surveys.

TABLE 4. SUMMARY OF SITE LOCATION AND CULTURAL AFFILIATION.

Site Number	Cultural Affiliation Period	Phase/Complex	Site Type	Elevation	Physiographic Feature	Site Area (acres)
24DL131	unknown prehistoric		occupation	6100'- 6140	glacial outwash terrace	40
24DL132	Middle	Hanna	workshop	6000'	flood plain	5
24DL133	Historic	Historic	habitation	6000'	flood plain	10
24DL134	unknown prehistoric		workshop	6000'- 6040'	glacial outwash terrace	10
24DL135	Late Middle	Old Women's Bitterroot	occupation	6000'- 6020'	glacial outwash terrace	40
24DL136	unknown prehistoric		occupation	5960'	flood plain	4
24DL137	unknown prehistoric		occupation	6000'	glacial outwash terrace	10
24DL138	Middle	Pelican Lake	habitation	6000'- 6080'	glacial outwash terrace	20
24DL139	unknown prehistoric		occupation	5980'	alluvial terrace	1
24DL140	Late	Old Women's	occupation	6200'- 6240'	glacial outwash terrace	20
24DL141	unknown prehistoric		occupation	6100'	glacial outwash terrace	4
24DL142	unknown prehistoric		occupation	6060'- 6100'	flood plain	15
24DL143	Middle Early	Hanna Agate Basin	occupation	6100'- 6180'	glacial outwash terrace	20
24DL144	unknown prehistoric		occupation	6120'	glacial outwash terrace	2
24DL145	Middle	Hanna Bitterroot	occupation	6100'- 6120'	glacial outwash terrace	40
24DL146	Early	Late Plano Agate Basin	occupation	6040'- 6100'	glacial outwash terrace	15
24DL147	unknown prehistoric		drive line	6080'- 6120'	glacial outwash terrace	5
24DL148	unknown prehistoric		occupation	6010'	alluvial terrace	15

TABLE 4. SUMMARY OF SITE LOCATION AND CULTURAL AFFILIATION (continued)

Site Number	Cultural Affiliation Period	Phase/Complex	Site Type	Elevation	Physiographic Feature	Site Area (acres)
24DL149	Middle	Duncan McKean	occupation	6110'-6200'	glacial outwash terrace	40
24DL150	Middle	Hanna	occupation	6160'-6180'	glacial outwash terrace	3
24DL151	Late Middle Early	Avonlea(?) Bitterroot Cody	occupation	6080'-6300'	alluvial terrace	60
24DL152	Middle	Hanna	workshop	6140'	igneous outcrop	2
24DL153	unknown prehistoric		workshop	6060'	flood plain	1
24DL154	unknown prehistoric		occupation	6100'-6120'	alluvial terrace	10
24DL155	unknown prehistoric		occupation	6100'	flood plain	5
24DL156	Historic	Historic	mining/habitation	6100'-6300'	flood plain/ alluvial terrace	320
24DL157	unknown prehistoric		occupation	6100'	alluvial terrace	20
24DL158	Middle Early	Hanna McKean Agate Basin	habitation	6100'-6180'	glacial outwash terrace	20
24DL159	unknown prehistoric		workshop	6400'	glacial outwash terrace	2
24DL160	unknown prehistoric		occupation	6300'-6360'	glacial outwash terrace	10
24DL161	Middle Late	Pelican Lake Bitterroot Late Phase (?)	occupation	6280'	glacial outwash terrace	5
24DL162	unknown prehistoric		occupation	6300'-6340'	glacial outwash terrace	15
24DL163	unknown prehistoric		occupation	6380'-6400'	glacial outwash terrace	5
24DL164	Middle	Bitterroot	occupation	6360'-6420'	glacial outwash terrace	50
24DL165	unknown prehistoric		occupation	6200'-6300'	glacial outwash terrace	10

TABLE 4. SUMMARY OF SITE LOCATION AND CULTURAL AFFILIATION (continued)

Site Number	Cultural Affiliation Period	Phase/Complex	Site Type	Elevation	Physiographic Feature	Site Area (acres)
24DL166	Middle	Bitterroot	occupation	6200'	glacial outwash terrace	15
24DL167	Middle	Hanna	occupation	6130'-6180'	alluvial terrace	40
24DL168	unknown prehistoric		occupation	6240'	alluvial terrace	1
24DL169	unknown prehistoric		workshop	6180'	flood plain	1
24DL170	unknown prehistoric		workshop	6210'	alluvial terrace	20
24DL171	Middle	Hanna	occupation	6220'-6300'	alluvial terrace	20
24DL172	Historic	Historic	habitation	6280'	alluvial terrace	30
24DL173	unknown prehistoric		occupation	6260'-6300'	alluvial terrace	20
24DL174	Middle	Hanna	occupation	6280'-6380'	alluvial terrace	40
24DL175	Historic	Historic	mining	6280'-6360'	glacial outwash terrace	40
24DL176	unknown prehistoric		workshop	6560'	volcanic outcrop	5

VII.

RECOMMENDATIONS

Ideally, each site should be left undisturbed and protected. But in instances where man-caused or natural destruction of the site is occurring or is imminent, more intensive gathering efforts should be attempted. The current condition of the site, the estimated information potential of the site, and the feasibility of recovering that information are considerations underlying the recommendations.

In the absence of planned development by the Montana Department of Fish and Game in the study locality, the following recommendations assume that any projected surface disturbance would be preceded by a reevaluation of each affected site.

Four sites (24DL141, 24DL143, 24DL146,and 24DL148) received site specific recommendations.

Because of the nature of the remaining sites, no recommendation is made for further work. A variety of factors contributing to this recommendation include: general paucity of cultural material, location of site in stable environment, or past destruction of site by erosion or human activity, In all cases, it appears that further data collecting efforts would not significantly improve the sites' status.

24DL141, 24DL143,and 24DL146 are unique occurrences that should be monitored periodically. Monitoring would entail at least annual visits to the sites and collection of surface cultural material. Since the site areas are generally small and easily accessible, monitoring could be done at nominal cost.

These sites appear to be of similar age and to define the surface of an old glacial outwash terrace. The three sites are in close proximity, and all are undergoing extensive erosion leading to elimination. Heavy concentrations of fire broken rock are eroding from just below the present surface and are prominently exposed on the clay banks below each site.

From two sites, 24DL143 and 24DL146, Agate Basin and/or late Plano culture components were identified. In both instances, the point fragments were collected from the clay banks, appearing to be associated with buried cultural deposits. The third site 25DL141 is devoid of diagnostic artifacts, but the general location, elevation and overall appearance of the site suggests human activity of comparable age.

Only one site 24DL148 is recommended for further subsurface testing. This buried site is contained within a terrace undergoing active erosion by French Creek. The cultural deposit is buried 13 cm to 70 cm by fine alluvium. 24DL148 is the only extensive buried site located during the survey, and it may contain preserved organic material. The lithic material exposed in the cutbank is of sufficient quantity to suggest that subsurface testing at various points on top of the terrace would result in additional information of high quality. The cultural affiliation of this buried deposit is unknown.

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APPENDIX A: ARTIFACT PLATES

Photos of identified projectile points and representative tools of the various artifact types are included. A total number of 1,331 artifacts were collected from 31 sites. Artifacts include: 40 projectile points, 230 bifaces, 34 scrapers, four drills, one graver, one burin, one pièce esquillée, four spokeshaves, one adz, 77 cores, one hammerstone, 27 modified flakes, and a lithic sample of 910 waste flakes.

Plate 1: Projectile Points

Late Period, Old Women's Phase
    a. 24DL135:1, b. 24DL140:1, c. 24DL140:2, d. 24DL140:3
Late Period (?)
    e. 24DL161:1
Late Period, Avonlea(?)
    f. 24DL151:4

Middle Period, Pelican Lake Phase
    g. 24DL138:1, h. 24DL161:2
Middle Period, Hanna Phase
    i. 24DL132:1, j. 24DL143:2, k. 24DL145:1, l. 24DL152:2,
    m. 24DL158:3, n. 24DL167:1, o. 24DL171:1, p. 24DL171:2,
    q. 24DL174:1
Middle Period, Duncan Phase
    r. 24DL149:2
Middle Period, McKean Phase
    s. 24DL149:1, t. 24DL158:2

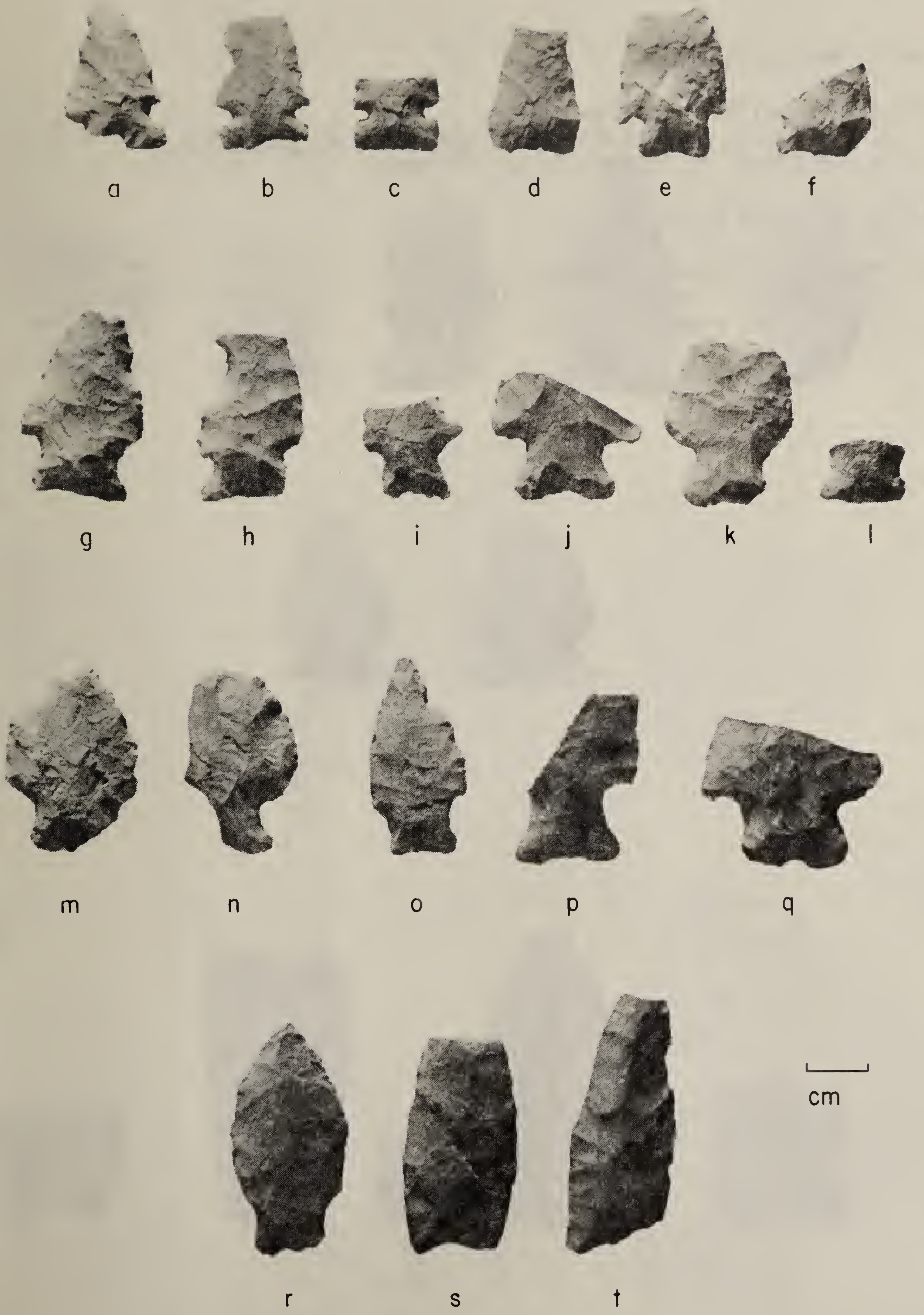
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Plate 2: Projectile Points

Middle Period, Bitterroot Phase
a. 24DL135:2, b. 24DL145:2, c. 24DL145:3, d. 24DL151:2,
e. 24DL161:3, f. 24DL164:1, g. 24DL166:1

Early Period, Late Plano (?)
h. 24DL146:1
Early Period, Agate Basin Complex
i. 24DL143, j. 24DL146:2, k. 24DL158:1
Early Period, Cody Complex
l. 24DL151:1

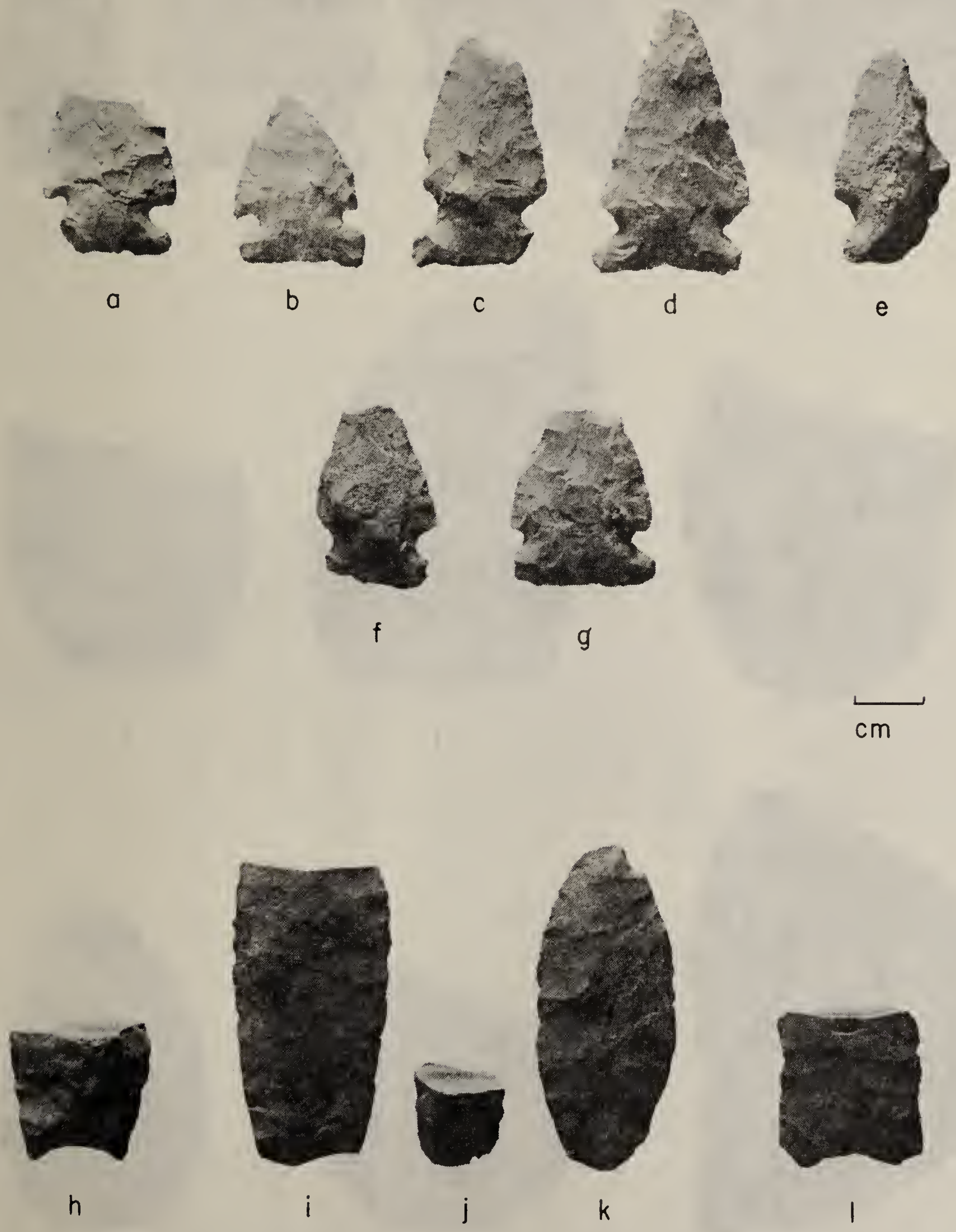
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Plate 3. Hafted and Ovate Knives

Hafted Knives
a. 24DL150:1, b. 24DL151:3, c. 24DL158:4, d. 24DL171:3

Ovate Knives
e. 24DL143:3, f. 24DL161:4, g. 24DL161:5, h. 24DL166:5,
i. 24DL151:6, j. 24DL158:16

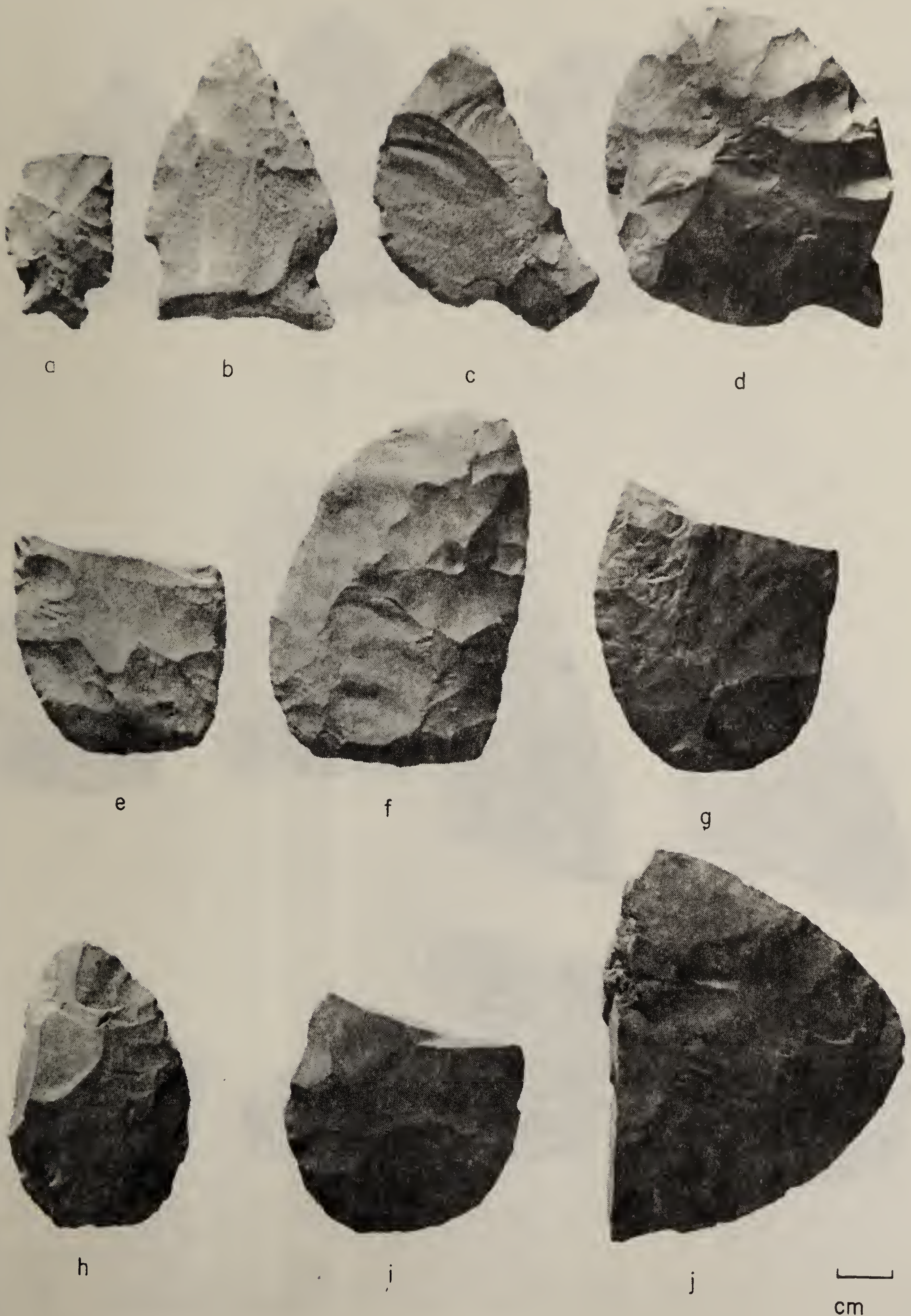
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Plate 4. Triangular and Lanceolate Knives

Triangular Knives

a. 24DL158:5, b. 24DL166:2, c. 24DL166:3, d. 24DL166:4,
e. 24DL166:6

Fragments of Triangular or Lanceolate Knives

f. 24DL161:11, g. 24DL149:8, h. 24DL143:6, i. 24DL166:28,
j. 24DL166:31, k. 24DL158:14, l. 24DL166:39

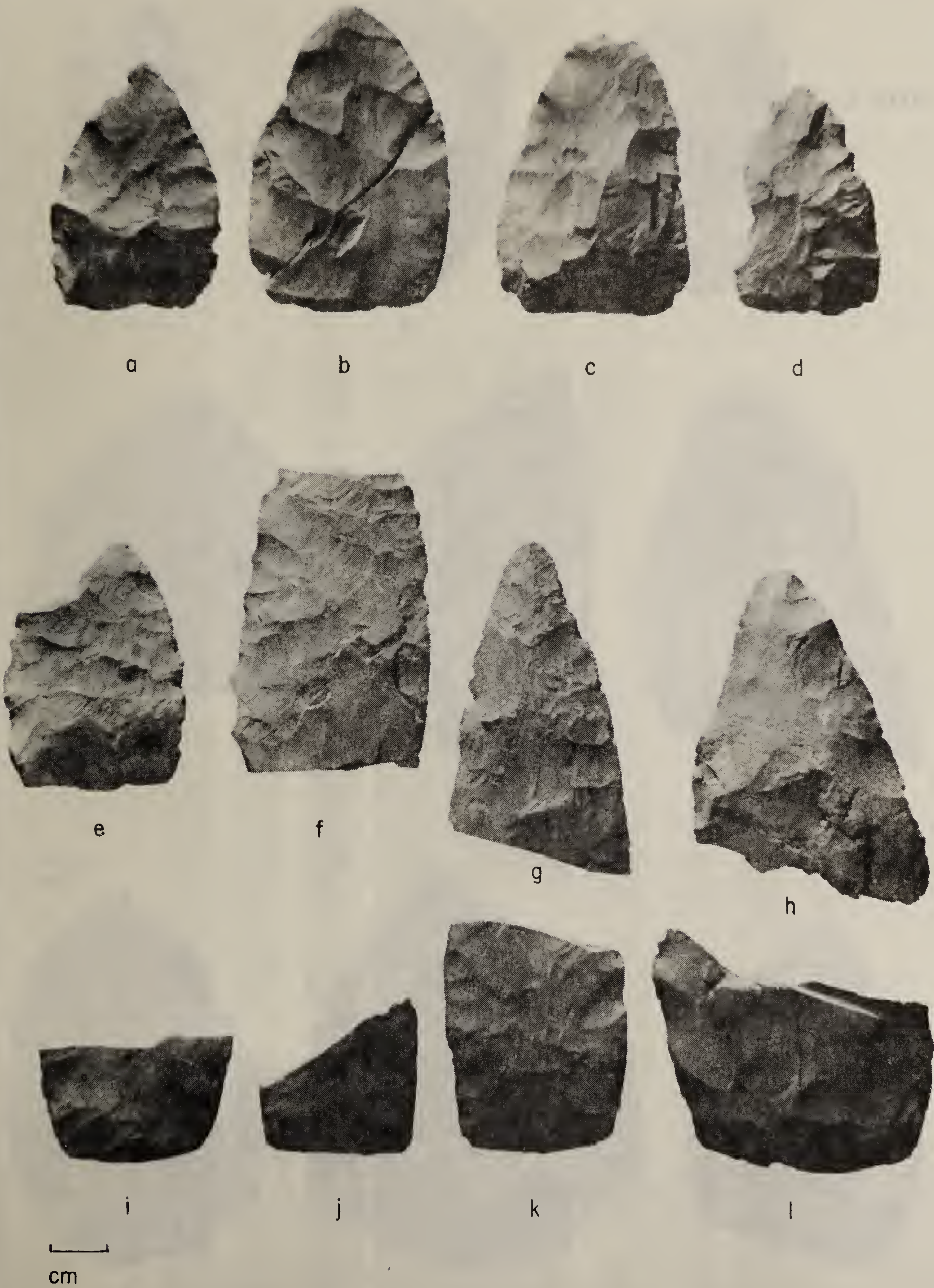
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Plate 5. Choppers

a. 24DL137:3, b. 24DL158:6, c. 24DL166:76, d. 24DL136:1,
e. 24DL158:25, f. 24DL174:9, g. 24DL144:4, h. 24DL161:22,
i. 24DL161:23

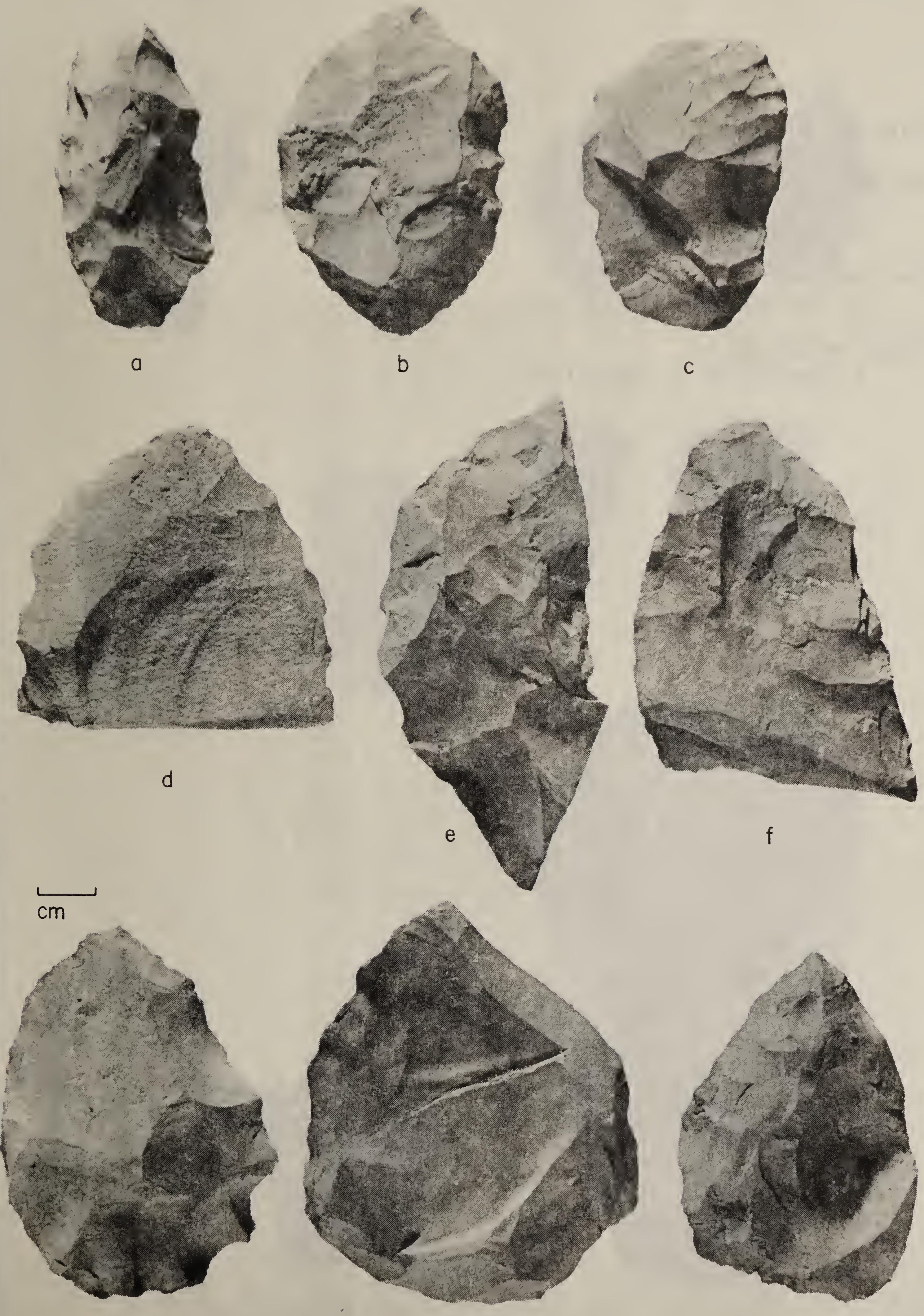
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Plate 6. Scrapers

End Scrapers
a. 24DL146:42, b. 24DL143:11, c. 24DL161:31, d. 24DL135:7,
g. 24DL158:31, h. 24DL158:33

Side Scrapers
e. 24DL140:8, f. 24DL161:34

Hafted End Scrapers
i. 24DL151:24, j. 24DL161:30

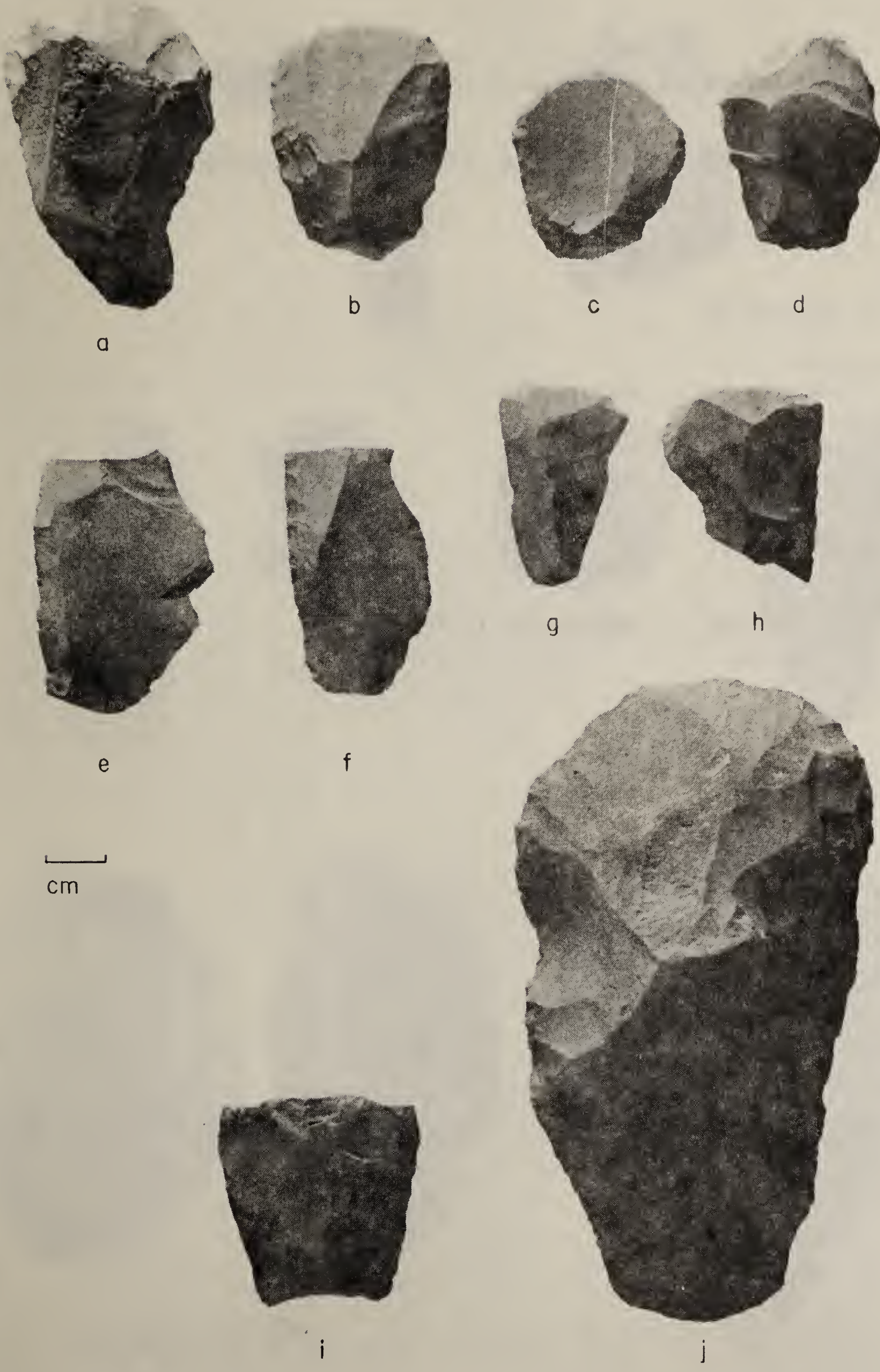
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Plate 7. Miscellaneous Lithic Tools and Modified Flakes

Drills
  a. Hafted drill 24DL166:79, b. 24DL140:11, c. 24DL149:30

Graver
  d. 24DL143:16

Burin
  e. 24DL158:38

Spokeshaves
  f. 24DL158:39, g. 24DL166:81

Piece Esquillee
  h. 24DL140:10

Adz (?)
  i. 24DL174:21

Modified Flakes
  j. 24DL161:33, k. 24DL158:36, l. 24DL174:31

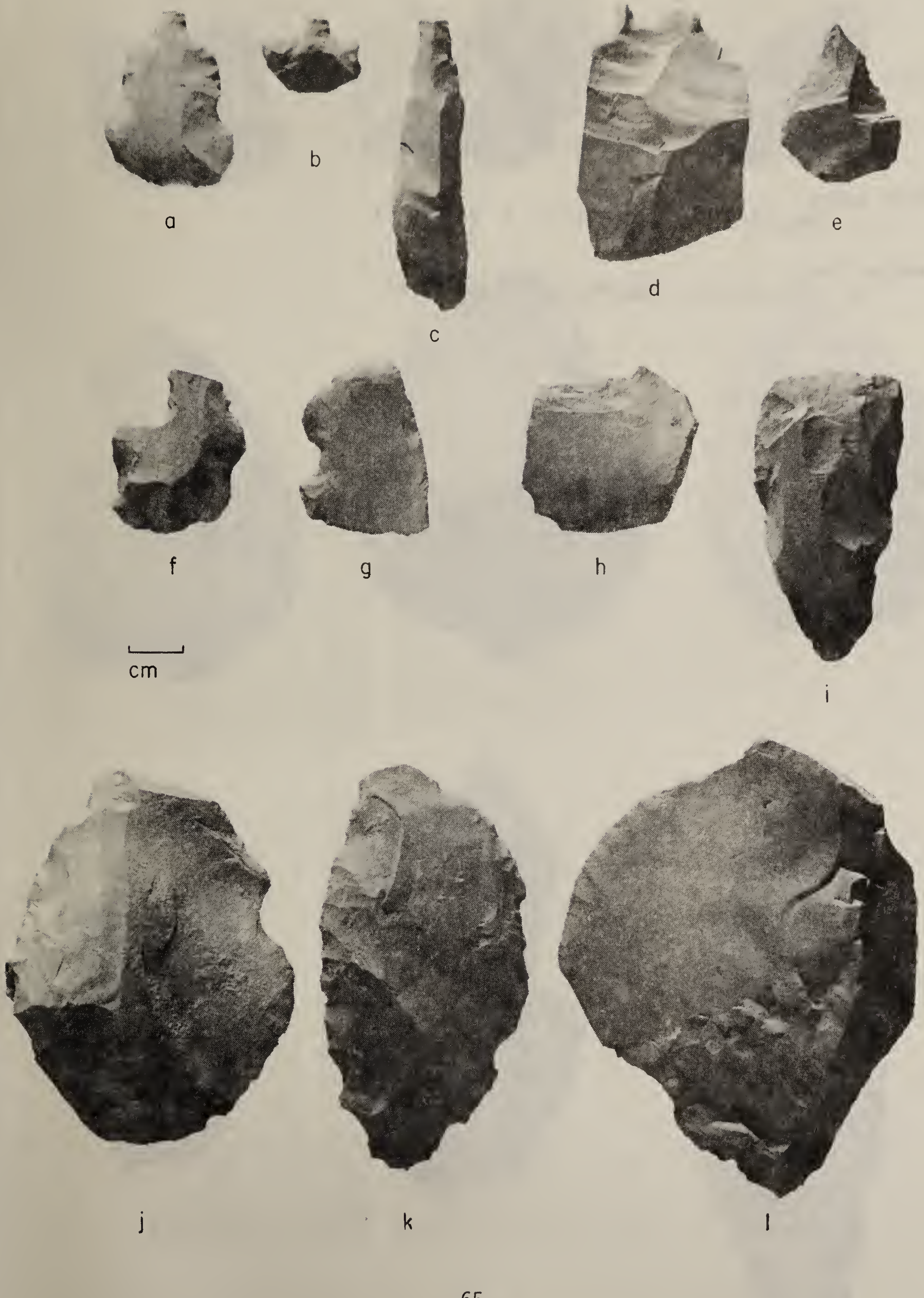
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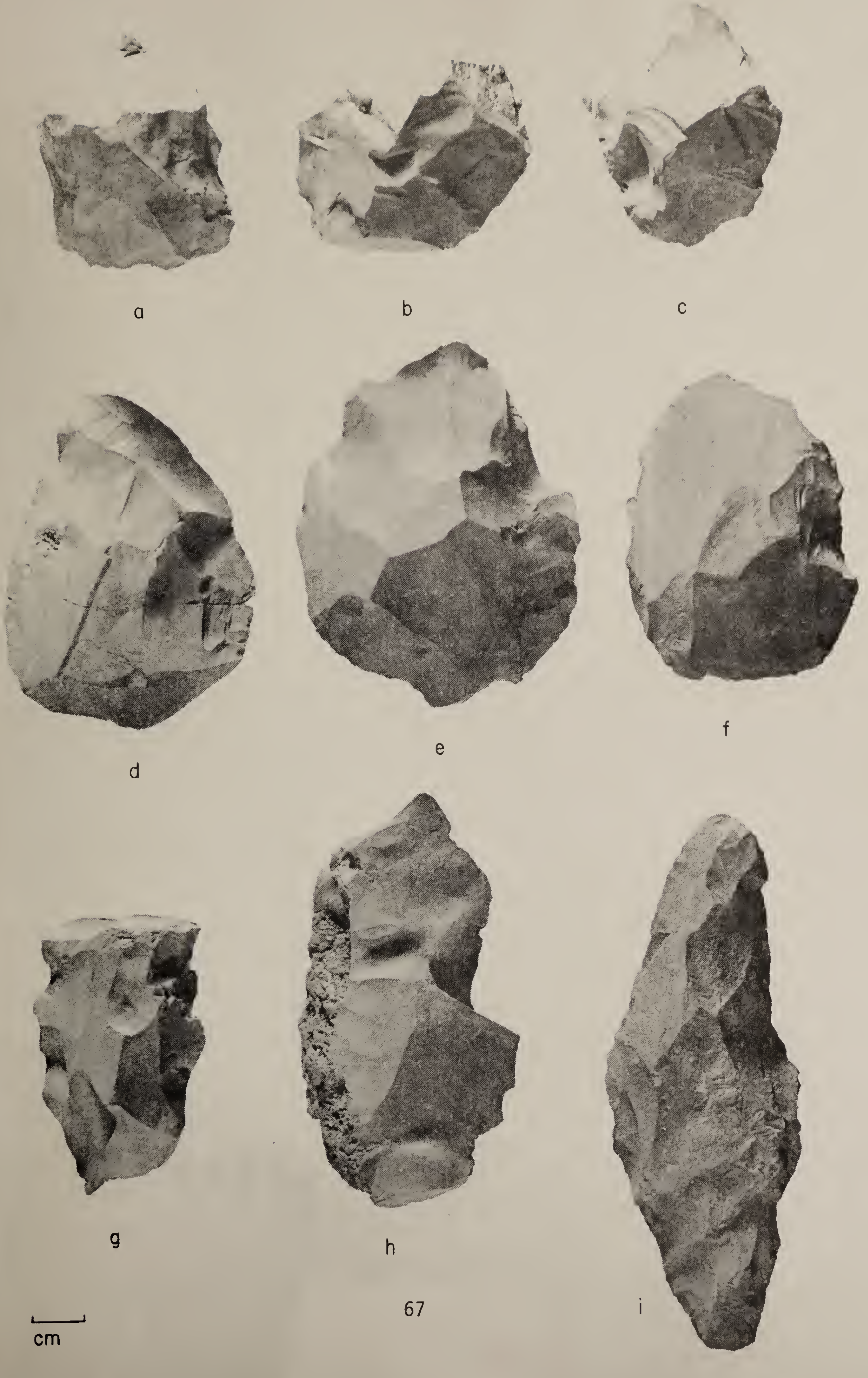
Plate 8. Cores

Discoidal Cores
a. 24DL146:38, b. 24DL149:24, c. 24DL166:59

Ovate Cores
d. 24DL149:23, e. 24DL161:21, f. 24DL164:4

Tabular Cores
g. 24DL138:5, h. 24DL159:4, i. 24DL174:13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